

J6K220385 - EVENT #106

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Analytical Data Package Prepared For
Brown and Caldwell
Yerington Air Quality - Event #106
Radiochemical Analysis By
STL Richland
2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.
Assigned Laboratory Code: STLR
Data Package Contains _____ Pages
Report No.: 33990

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
33127	EVENT 106	000547	J6K220385-4	JKAG71AA	9JKAG710	6332247
		000547	J6K220385-4	JKAG71AE	9JKAG710	6332250
		000547	J6K220385-4	JKAG71AC	9JKAG710	6332252
		000547	J6K220385-4	JKAG71AD	9JKAG710	6332254
	P-0782	J6K220385-1	JKAGW1AA	9JKAGW10	6332247	
	P-0782	J6K220385-1	JKAGW1AE	9JKAGW10	6332250	
	P-0782	J6K220385-1	JKAGW1AC	9JKAGW10	6332252	
	P-0782	J6K220385-1	JKAGW1AD	9JKAGW10	6332254	
	P-0783	J6K220385-2	JKAG11AA	9JKAG110	6332247	
	P-0783	J6K220385-2	JKAG11AE	9JKAG110	6332250	
	P-0783	J6K220385-2	JKAG11AC	9JKAG110	6332252	
	P-0783	J6K220385-2	JKAG11AD	9JKAG110	6332254	
	P-0784	J6K220385-3	JKAG41AA	9JKAG410	6332247	
	P-0784	J6K220385-3	JKAG41AE	9JKAG410	6332250	
	P-0784	J6K220385-3	JKAG41AC	9JKAG410	6332252	
	P-0784	J6K220385-3	JKAG41AD	9JKAG410	6332254	

Certificate of Analysis

December 19, 2006

Brown & Caldwell
2701 Prospect Park Drive
Rancho Cordova, CA 95670

Attention: Guy Graening

STL Richland
2800 George Washington Way
Richland, WA 99354

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Date Received at Lab	:	November 21, 2006
Project Name	:	Air Quality Monitoring Yerington Mine
Project Number	:	121243
Event Number	:	106
PO Number	:	129682.001
Sample Type	:	Four (4) Filters
SDG Number	:	33127

CASE NARRATIVE

I. Introduction

On November 21, 2006, four filter samples were received at the STL Richland (STLR) laboratory for radiochemical analysis. Upon receipt, the samples were assigned the STLR identification numbers as described on the cover page of the Analytical Data Package report form. The samples were assigned to Lot Number J6K220385.

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information; analytical results and the appropriate associated statistical uncertainties.

The analysis requested was:

Alpha Spectroscopy

Thorium-228, -230, -232 by method RICH-RC-5087

Gas Proportional Counters

Gross Alpha by method STL-RICHRC5016/5014

Radium-228 by method STL RICH-RC-5005

Alpha Scintillation Counter

Radium-226 by method STL RICH-RC-5005

IV. Quality Control

The analytical result for each analysis performed includes a minimum of one laboratory control sample (LCS), and one reagent blank sample analysis. Any exceptions have been noted in the "Comments" section.

V. Comments

Thorium-228, -230, -232:

The LCS, batch blank and sample results are within analytical requirements.

Gross Alpha Analysis:

The LCS, batch blank and sample results are within analytical requirements.

Radium-228 Analysis:

The LCS, batch blank and sample results are within analytical requirements.

Radium-226 Analysis:

The LCS, batch blank and sample results are within analytical requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. The Laboratory Manager or a designee, as verified by the following signature has authorized release of the data contained in this hard copy data package.

Reviewed and approved:



Sherry A. Adam
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x,y,z,\dots)$. The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/vn), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation $(Result/Expected)-1$ as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) <i>u_c - Combined Uncertainty.</i>	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c , the <i>combined uncertainty</i> . The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \sqrt{2 * (BkgndCnt/BkgndCntMin) / SCntMin}) * (\text{ConvFct} / (\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \sqrt{(BkgndCnt/BkgndCntMin) / SCntMin}) * (\text{ConvFct} / (\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol}) * \text{IngrFct})$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number .
RER	The equation Replicate Error Ratio = $(S-D)/[\sqrt{TPUs^2 + TPUD^2}]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUD is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

Date: 19-Dec-06

STL Richland STLR

Ordered by Client Sample ID, Batch No.

Report No. : 33990

SDG No: 33127

Client ID	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	MDC MDA	RER2
000547	JKAG71AA	TH-228	0.358 +- 0.281	=	pCi/sample	97%	0.287	
		TH-230	0.137 +- 0.166	ND	pCi/sample	97%	0.273	
		TH-232	0.137 +- 0.166	ND	pCi/sample	97%	0.273	
000547	JKAG71AE	ALPHA	5.94 +- 3.57	=	pCi/sample	100%	4.38	
000547	JKAG71AC	RA-226	0.116 +- 0.217	ND	pCi/sample	105%	0.39	
000547	JKAG71AD	RA-228	-0.2490 +- 0.651	ND	pCi/sample	95%	1.73	
P-0782	JKAGW1AA	TH-228	0.143 +- 0.170	ND	pCi/sample	96%	0.245	
		TH-230	0.214 +- 0.198	ND	pCi/sample	96%	0.234	
		TH-232	0.00000 +- 0.0871	ND	pCi/sample	96%	0.234	
P-0782	JKAGW1AE	ALPHA	5.59 +- 3.59	=	pCi/sample	100%	4.81	
P-0782	JKAGW1AC	RA-226	0.622 +- 0.555	ND	pCi/sample	84%	0.88	
P-0782	JKAGW1AD	RA-228	0.483 +- 0.829	ND	pCi/sample	77%	1.94	
P-0783	JKAG11AA	TH-228	0.231 +- 0.213	ND	pCi/sample	92%	0.252	
		TH-230	0.160 +- 0.189	ND	pCi/sample	92%	0.294	
		TH-232	0.0399 +- 0.0896	ND	pCi/sample	92%	0.24	
P-0783	JKAG11AE	ALPHA	2.58 +- 2.58	ND	pCi/sample	100%	4.33	
P-0783	JKAG11AC	RA-226	0.108 +- 0.318	ND	pCi/sample	103%	0.591	
P-0783	JKAG11AD	RA-228	-0.0933 +- 0.671	ND	pCi/sample	95%	1.73	
P-0784	JKAG41AA	TH-228	0.0826 +- 0.214	ND	pCi/sample	81%	0.463	
		TH-230	0.289 +- 0.267	ND	pCi/sample	81%	0.315	
		TH-232	0.0787 +- 0.158	ND	pCi/sample	81%	0.315	
P-0784	JKAG41AE	ALPHA	4.25 +- 3.45	ND	pCi/sample	100%	5.63	
P-0784	JKAG41AC	RA-226	0.216 +- 0.321	ND	pCi/sample	104%	0.552	
P-0784	JKAG41AD	RA-228	1.46 +- 0.833	ND	pCi/sample	93%	1.57	

Number of Results: 24

QC Results Summary
STL Richland STL
 Ordered by QC Type, Batch No.

Date: 19-Dec-06

Report No. : 33990

SDG No.: 33127

QC Type	Work Order Number	Parameter	Result +- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
BLANK QC	JKENG1AA	TH-228	0.0120 +- 0.0174	N	pCi/sample	66%			0.0287
		TH-230	0.00459 +- 0.0145	N	pCi/sample	66%			0.0338
		TH-232	0.00459 +- 0.0103	N	pCi/sample	66%			0.0275
BLANK QC	JKENK1AA	ALPHA	0.00135 +- 0.00325	N	pCi/sample	100%			0.00704
BLANK QC	JKENM1AA	RA-226	0.0301 +- 0.0579	N	pCi/sample	105%			0.104
BLANK QC	JKENQ1AA	RA-228	0.00141 +- 0.00116	N	pCi/sample	93%			0.00243
LCS	JKENG1AC	TH-230	2.02 +- 0.512	=	pCi/sample	36%	110%	0.1	0.0597
LCS	JKENK1AC	ALPHA	0.150 +- 0.0397	=	pCi/sample	100%	83%	-0.2	0.0081
LCS	JKENM1AC	RA-226	1.40 +- 0.360	=	pCi/sample	105%	102%	0.0	0.0636
LCS	JKENQ1AC	RA-228	0.0255 +- 0.00410	=	pCi/sample	94%	77%	-0.2	0.00251

Number of Results: 10

STL Richland	Bias = (Result/Expected)-1 as defined by ANSI N13.30.
rptSTLRchQcSum V5.0.3 A2002	= ERPIMS - Equal To, Analyte Detected
	ND Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 19-Dec-06

Lab Name: STL Richland
 Lot-Sample No.: J6K220385-4
 Client Sample ID: 000547

SDG: 33127
 Report No. : 33990
 COC No. :

Collection Date: 10/24/2006 12:35:00 PM
 Received Date: 11/21/2006 10:00:00 AM

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDCIMDA Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rs/MDC, Rs/TotUcert	Analysis, Prep Date	Ordered by Client Sample ID, Batch No.	
										Matrix:	FILTER
Batch: 6332247	Work Order: JKAG71AA				Report DB ID: 9JKAG710						
TH-228	0.358	=	0.27	0.28	0.287	pCi/sample	97%	(1.3)	12/12/06 12:37 p	1.0	0.08266
TH-230	0.137	ND	0.16	0.17	0.273	pCi/sample	97%	0.5 (2.5)	12/12/06 12:37 p	1.0	0.08266
TH-232	0.137	ND	0.16	0.17	0.273	pCi/sample	97%	0.5 (1.6)	12/12/06 12:37 p	1.0	0.08266
Batch: 6332250	Work Order: JKAG71AE				Report DB ID: 9JKAG710						
ALPHA	5.94	=	3.3	3.6	4.38	pCi/sample	100%	(1.4) (3.3)	12/16/06 07:47 a	1.0	0.02068
Batch: 6332252	Work Order: JKAG71AC				Report DB ID: 9JKAG710						
RA-226	0.116	ND	0.22	0.22	0.39	pCi/sample	105%	0.3 (1.1)	12/12/06 01:12 p	1.0	0.24864
Batch: 6332254	Work Order: JKAG71AD				Report DB ID: 9JKAG710						
RA-228	-0.2490	ND	0.65	0.65	1.73	pCi/sample	95%	-0.14 -0.76	12/13/06 05:56 a	1.0	0.24864
Number of Results: 6											
Comments:											

STL Richland MDCCMDA Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample = ERPIMS - Equal To, Analyte Detected
 V5.0.3 A2002 ND Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 19-Dec-06

Lab Name: STL Richland
 Lot-Sample No.: J6K220385-1
 Client Sample ID: P-0782

SDG: 33127
 Report No. : 33990
 COC No. :

Parameter	Result	Qual	Count	Total	MDC/MDA	Rpt Unit,	Yield	Rst/MDC,	Analysis,	Total Sa	Aliquot	Analyst Method,
			Error (2 s)	Uncert(2 s)	Action Lev	Lc	CRDL(RL)	Rst/TotUcert	Prep Date	Size	Size	Primary Detector
Batch: 6332247 Work Order: JKAGW1AA Report DB ID: 9JKAGW10												
TH-228	0.143	ND	0.17	0.17	0.245	pCi/sample	96%	0.58	12/12/06 12:37 p	1.0	0.08313	ISOTH
TH-230	0.214	ND	0.19	0.20	0.234	pCi/sample	96%	0.92	12/12/06 12:37 p	1.0	0.08313	ALP171
TH-232	0.00000	ND	0.0000	0.087	0.234	pCi/sample	96%	0.	12/12/06 12:37 p	1.0	0.08313	ISOTH
					0.064	1.0	0.064	0.			Sample	ALP171
Batch: 6332250 Work Order: JKAGW1AE Report DB ID: 9JKAGW10												
ALPHA	5.59	=	3.3	3.6	4.81	pCi/sample	100%	(1.2)	12/16/06 07:47 a	1.0	0.02071	E900.0
					1.95	20.0	(3.1)			Sample	Sample	GPC10A
Batch: 6332252 Work Order: JKAGW1AC Report DB ID: 9JKAGW10												
RA-226	0.622	ND	0.54	0.55	0.88	pCi/sample	84%	0.71	12/12/06 01:11 p	1.0	0.24808	E903.1
					0.398	1.0	(2.2)			Sample	Sample	ASC1RH
Batch: 6332254 Work Order: JKAGW1AD Report DB ID: 9JKAGW10												
RA-228	0.483	ND	0.75	0.83	1.94	pCi/sample	77%	0.25	12/13/06 05:56 a	1.0	0.24808	E904.0
					0.828	3.1	(1.2)			Sample	Sample	GPC2A

Number of Results: 6

Comments:

STL Richland MDC/MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample = ERPIMS - Equal To, Analyte Detected
 V5.0.3 A2002 ND Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 19-Dec-06

Lab Name: STL Richland
 Lot-Sample No.: J6K220385-2
 Client Sample ID: P-0783

SDG: 33127
 Report No. : 33990
 COC No. :

Parameter	Result	Count	Total	MDC/MDA,	Rpt Unit,	Yield	Rst/MDC,	Analysis,	Total Sa	Aliquot	Analyst Method,
		Qual	Uncert(2 s)	Action Lev	Lc	CRDL(RL)	Rst/TotUncrt	Prep Date	Size	Size	Primary Detector
Batch: 6332247 Work Order: JKAG11AA Report DB ID: 9JKAG110											
TH-228	0.231	ND	0.21	0.21	0.252	pCi/sample	92%	0.92	12/12/06 12:37 p	1.0	0.08195
TH-230	0.160	ND	0.19	0.19	0.294	pCi/sample	92%	0.54	12/12/06 12:37 p	1.0	0.08195
TH-232	0.0399	ND	0.089	0.090	0.24	pCi/sample	92%	0.17	12/12/06 12:37 p	1.0	0.08195
Batch: 6332250 ALPHA	2.58	ND	2.5	2.6	4.33	pCi/sample	100%	0.6	12/16/06 07:47 a	1.0	0.02051
RA-226	0.108	ND	0.32	0.32	0.591	pCi/sample	103%	0.18	12/12/06 01:02 p	1.0	0.24562
Batch: 6332252 RA-228	-0.0933	ND	0.67	0.67	1.73	pCi/sample	95%	-0.05	12/13/06 05:56 a	1.0	E904.0
				0.751	3.1		-0.28			Sample	GPC2B
Number of Results: 6											
Comments:											

STL Richland MDC/MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 rptSTLRchSample = EFPIMS - Equal To, Analyte Detected
 V5.0.3 A2002 ND Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM I
SAMPLE RESULTS

Date: 19-Dec-06

Lab Name: STL Richland
Lot Sample No.: J6K220385-3
Client Sample ID: P-0784

SDG: 33127
Report No.: 33990
COC No. :

Collection Date: 10/24/2006 12:30:00 PM
Received Date: 11/21/2006 10:00:00 AM
Matrix: FILTER AIR
Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count	Total	MDC MDA	Rpt Unit,	Yield	Rst MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
			Uncert(2 s)	Action Lev	Lc	CRDL(RL)						
Batch: 6332247	Work Order: JKAG41AA			Report DB ID: 9JKAG410								
TH-228	0.0826	ND	0.21	0.21	0.463	pCi/sample	81%	0.18	12/12/06 12:37 p	1.0	0.08344	ISO TH
TH-230	0.289	ND	0.26	0.27	0.315	pCi/sample	81%	0.92	12/12/06 12:37 p	1.0	0.08344	ALP173
TH-232	0.0787	ND	0.16	0.16	0.315	pCi/sample	81%	0.25	12/12/06 12:37 p	1.0	0.08344	ISO TH
Batch: 6332250	Work Order: JKAG41AE			Report DB ID: 9JKAG410								
ALPHA	4.25	ND	3.3	3.4	5.63	pCi/sample	100%	0.76	12/16/06 07:47 a	1.0	0.02035	E900.0
Batch: 6332252	Work Order: JKAG41AC			Report DB ID: 9JKAG410								
RA-226	0.216	ND	0.32	0.32	0.552	pCi/sample	104%	0.39	12/12/06 01:06 p	1.0	0.24943	E903.1
Batch: 6332254	Work Order: JKAG41AD			Report DB ID: 9JKAG410								
RA-228	1.46	ND	0.77	0.83	1.57	pCi/sample	93%	0.93	12/13/06 05:56 a	1.0	0.24943	E904.0
					0.668		3.1	(3.5)				
Number of Results: 6												
Comments:												

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRchSample = ERPIMS - Equal To, Analyte Detected
V5.0.3 A2002 ND Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncert or not identified by gamma scan software.

FORM II

Date: 19-Dec-06

BLANK RESULTS

Lab Name: STL Richland
 Lot-Sample No.: J6K280000-247

SDG: 33127

Report No. : 33990

Matrix: FILTER

Parameter	Result	Count	Total Uncert(2 s)	MDCIMDA, Lc	Rpt Unit, CRDL	Rst/MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6332247	Work Order:	JKENG1AA	Report DB ID: JKENG1AB							
TH-228	0.0120	ND	0.017	0.017	0.0287 pCi/sample	66%	0.42 (1.4)	12/12/06 10:57 p	1.0 Sample	1.0 ISOTH ALP172
TH-230	0.00459	ND	0.015	0.015	0.00788 1.0 pCi/sample	66%	0.14 0.63	12/12/06 10:57 p	1.0 Sample	1.0 ISOTH ALP172
TH-232	0.00459	ND	0.010	0.010	0.0107 1.0 pCi/sample	66%	0.17 0.89	12/12/06 10:57 p	1.0 Sample	1.0 ISOTH ALP172
Number of Results: 3										

Comments:
 STL Richland rptSTLRchBlank V5.0.3 A2002

MDCIMDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
 ND Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Nda or Total Uncert or not identified by gamma scan software.

FORM II**BLANK RESULTS**

Date: 19-Dec-06

Lab Name: STL Richland
Lot-Sample No.: J6K280000-250

SDG: 33127
Report No.: 33990

Matrix: FILTER

Parameter	Result	Count	Total Uncert(2 s)	MDCIMDA, Lc	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncrt	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6332250	Work Order: JKENK1AA	Report DB ID: JKENK1AB									
ALPHA	0.00135	ND	0.0032	0.0032	0.00704 pCi/sample	100%	0.19	12/16/06 10:35 a	1.0	12.89	E900.0
				0.00282	20.0		0.83		Sample	Sample	GPC10F

Number of Results: 1

Comments:

STL Richland MDCIMDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rpSTLRchBlank ND Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncrt or not identified by gamma scan software.
V5.0.3 A2002

FORM II**BLANK RESULTS**

Date: 19-Dec-06

Lab Name: STL Richland
Lot-Sample No.: J6K280000-252

SDG: 33127**Report No. :** 33990**Matrix:** FILTER

Parameter	Result	Count	Total Uncert(2 s)	MDCIMDA, Lc	Rpt Unit, CRDL	Rst/MDC, Yield	Rst/TotUncrt	Analysis, Prep Date	Total Sa Size	Aliquot Size	Analy Method, Primary Detector
Batch: 6332252	Work Order: JKENM1AA	Report DB ID: JKENM1AB									
RA-226	0.0301	ND	0.058	0.058	0.104 pCi/sample	105%	0.29 (1.)	12/12/06 01:53 p	1.0	1.0	E903.1 ASCPMA

Number of Results: 1**Comments:**

STL Richland MDCIMDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRchBlank ND Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda or Total Uncrt or not identified by gamma scan software.
 V5.0.3 A2002

FORM II**BLANK RESULTS**

Date: 19-Dec-06

Lab Name: STL Richland
Lot-Sample No.: J6K280000-254

SDG: 33127
Report No. : 33990

Parameter	Result	Count	Total	MDC MDA, Lc	Rpt Unit, CRDL	Rst MDC, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Matrix:	FILTER
Batch: 6332254	Work Order: JKENQ1AA	Report DB ID: JKENQ1AB									
RA-228	0.00141	ND	0.0011	0.0012	0.00243 pCi/sample	93%	0.58 12/13/06 06:48 a (2.4)	1.0	151.01	E904.0	GPC4B

Number of Results: 1

Comments:

FORM ii**LCS RESULTS**

Date: 19-Dec-06

Lab Name: STL Richland
Lot-Sample No.: J6K280000-247

SDG: 33127
Report No.: 33990

Matrix: FILTER

Parameter	Result	Count	Total	Report Unit	Report Unit	Expected	Recovery,	Analysis,	Aliquot	Analy Method,
		Qual	Uncert(2 s)	MDC MDA	Unit	Uncert	Bias	Prep Date	Size	Primary Detector
Batch: 6332247	Work Order: JKENG1AC			Report DB ID: JKENG1CS						
TH-230	2.02	=	0.28	0.51	0.0597 pCi/sample	35.68%	1.83	0.061	110%	12/12/06 10:57 p

Number of Results: 1**Comments:**

Rec Limits: 70. 130. 0.1
 Sample ALP173

FORM II
LCS RESULTS

Date: 19-Dec-06

Lab Name: STL Richland
 Lot-Sample No.: J6K280000-250

SDG: 33127
 Report No.: 33990

Matrix: FILTER

Parameter	Result	Count	Total	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 6332250	Work Order: JKENK1AC		Report DB ID: JKENK1CS								
ALPHA	0.150	=	0.018	0.040	0.0081	pCi/sample	100.00%	0.181	0.0057	83%	12/17/06 09:21 a

Number of Results: 1

Comments:

FORM II

Date: 19-Dec-06

LCS RESULTS

Lab Name: STL Richland
Lot-Sample No.: J6K280000-252

SDG: 33127
Report No.: 33990

Matrix: FILTER

Parameter	Result	Count	Total	Uncert(2 s)	MDCIMDA	Report Unit	Yield	Expected	Expected	Recovery,	Analysis,	Aliquot	Analy Method,
		Qual	Error (2 s)					Uncert	Uncert	Bias	Prep Date	Size	Primary Detector
Batch: 6332252	Work Order: JKENM1AC				Report DB ID: JKENM1CS								
RA-226	1.40	=	0.19	0.36	0.0636	pCi/sample	104.73%	1.37	0.021	102%	12/12/06 01:53 p	1.0	E903.1

Number of Results: 1

Comments:

STL Richland Bias = (Result/Expected)-1 as defined by ANSI N13.30.
 rptSTLRchLcs = ERPIMS - Equal To, Analyte Detected
 V5.0.3 A2002

FORM II

Date: 19-Dec-06

LCS RESULTS

Lab Name: STL Richland
Lot-Sample No.: J6K280000-254

SDG: 33127
Report No.: 33990

Matrix: FILTER

Parameter	Result	Count	Total	Report Unit	Expected	Recovery,	Aliquot	Analy Method,
	Qual	Error (2 s)	Uncert(2 s)	MDClMDA	Uncert	Bias	Size	Primary Detector
Batch: 6332254	Work Order: JKENQ1AC	Report DB ID: JKENQ1CS						
RA-228	0.0255	=	0.0029	0.0041	0.00251	94.07%	0.0332	0.001

Number of Results: 1

Comments:

Rec Limits:	70.	130.	-0.2	12/13/06 06:48 a	150.17	E904.0
Sample						GPC4C

STL Richland Bias - (Result/Expected)-1 as defined by ANSI NI3.30.
 rptSTLRchLcs = ERPMIS - Equal To, Analyte Detected
 V5.0.3 A2002

CHAIN OF CUSTODY

BROWN AND CALDWELL

CHAIN OF CUSTODY RECORD

3264 Goni Road / Suite 153
Carson City, NV 89706
775-883-4118 / FAX 775-883-5108

4425 W. Spring Mountain Road / Suite 225
Las Vegas, NV 89102
702-938-4080 / FAX 702-938-4082

201 East Washington Street / Suite 500
Phoenix, AZ 85004
602-567-4000 / FAX 602-567-4001

COC No. _____

33127 due 12.19.04

PROJECT NAME:

PROJECT NUMBER:

16 OF THE EXPOSED FILTER WAS UTILIZED FOR THE METALS/SULFATE ANALYSES.

LABORATORY NAME & ADDRESS:

STC MANAGEMENT Lot # JKAG61

LINE NO.	SAMPLE - I.D.	COLLECTION		NUMBER OF CONTAINERS	SAMPLES INITIALED	CONTAINER SIZE AND TYPE	MATRIX CODE	PRESERVE VIALS	ANALYSES REQUESTED	FIELD FILTERED	OC - REQ	SAMPLING METHOD	DEPTH (FT) BEGIN	DEPTH (FT) END	PD READING (PM)	
		DATE	TIME													
01				1	8	SAMPLE	N	Y	Metals	JKAG61						
02				1	8	SAMPLE	N	Y	Metals	JKAG61						
03				1	8	SAMPLE	N	Y	Metals	JKAG61						
04				1	8	SAMPLE	N	Y	Metals	JKAG61						
05				1	8	SAMPLE	N	Y	Metals	JKAG61						
06				1	8	SAMPLE	N	Y	Metals	JKAG61						
07				1	8	SAMPLE	N	Y	Metals	JKAG61						
08				1	8	SAMPLE	N	Y	Metals	JKAG61						
09				1	8	SAMPLE	N	Y	Metals	JKAG61						
10				1	8	SAMPLE	N	Y	Metals	JKAG61						
COLLECTED & RELEASED BY:		DATE		TIME		COOLER I.D.		TIME		RELINQUISHED BY:		DATE		TIME		COMMENTS (see note on back):
RECEIVED BY:		DATE	TIME													
<i>[Signature]</i>		11/10/00	10:00													
RECORD RETURNED BY:		DATE	TIME													
COURIER:																

DISTRIBUTION: WHITE - PROJECT FILE • CANARY - LAB RECEIPT • PINK - DATA MANAGEMENT • GOLDENROD - FIELD
USE A BALLPOINT PEN, BLACK INK, AND PRESS FIRMLY. INSTRUCTIONS ARE ON THE BACK.

SEVERN
TRIVENI

STL

Sample Check-in List

Date/Time Received: 11/21/06 10:00

Client: Brown / CALDWELL SDG #: 33127 NA [] SAF #: Event 104 NA []

Work Order Number: J6K220385

Chain of Custody # YERA000195
YERA000196

Shipping Container ID: _____

Air Bill # _____

1. Custody Seals on shipping container intact? NA [] Yes No []
2. Custody Seals dated and signed? NA [] Yes No []
3. Chain of Custody record present? Yes No []
4. Cooler temperature: NA ✓ 5. Vermiculite/packing materials is NA Wet [] Dry []
6. Number of samples in shipping container: 10
7. Sample holding times exceeded? NA Yes [] No []
8. Samples have:
____ tape
____ custody seals hazard labels
____ appropriate samples labels
9. Samples are:
____ in good condition leaking
____ broken have air bubbles
(Only for samples requiring head space)
10. Sample pH taken? AIR FILTERS NA pH<2 [] pH>2 [] pH>9 []
11. Sample Location, Sample Collector Listed? * Yes No []
*For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [] No
13. Description of anomalies (include sample numbers): _____

Sample Custodian: D. K. K.

Date: 11/21/06 10:00

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

[] No action necessary; process as is.

Project Manager _____ Date _____

THORIUM

SAMPLE AND QC DATA

Lot No., Due Date: J6K220385,J6K220386; 12/19/2006
Client, Site: 536403; AIR MONITORING Yerington Mine
QC Batch No., Method Test: 6332247; RTHISO ThIso by ALP
SDG, Matrix: 33127,33128; FILTER

1.0 COC

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?

Yes No N/A

2.0 QC Batch

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?

Yes No N/A

2.2 Are the QC appropriate for the analysis included in the batch?

Yes No N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?

Yes No N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?

Yes No N/A

3.0 QC & Samples

3.1 Is the blank results, yield, and MDA within contract limits?

Yes No N/A

3.2 Is the LCS result, yield, and MDA within contract limits?

Yes No N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?

Yes No N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?

Yes No N/A

3.5 Are the sample yields and MDAs within contract limits?

Yes No N/A

4.0 Raw Data

4.1 Were results calculated in the correct units?

Yes No N/A

4.2 Were analysis volumes entered correctly?

Yes No N/A

4.3 Were Yields entered correctly?

Yes No N/A

4.4 Were spectra reviewed/meet contractual requirements?

Yes No N/A

4.5 Were raw counts reviewed for anomalies?

Yes No N/A

5.0 Other

5.1 Are all nonconformances included and noted?

Yes No N/A

5.2 Are all required forms filled out?

Yes No N/A

5.3 Was the correct methodology used?

Yes No N/A

5.4 Was transcription checked?

Yes No N/A

5.5 Were all calculations checked at a minimum frequency?

Yes No N/A

5.6 Are worksheet entries complete and correct?

Yes No N/A

6.0 Comments on any No response:

First Level Review Pam Anderson

Date 12-15-06

100%
100%
100%
100%

100%
100%
100%
100%

Final Review (Checklist)
RADIOCHEMISTRY
Second Level Review

QCI Batch Number:

633Z247

Review Item	Yes (Y)	No (N)	NA (N)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	/		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	/		
3. Are the correct isotopes reported?	/		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result < the Contract Detection Limit?	/		
2. Does the blank result meet the Contract criteria?	/		
3. Is the blank result < the Contract Detection limit?	/		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			/
5. Is the LCS recovery with contract acceptance criteria?	/		
6. Is the LCS Minimum Detectable Activity < the Contract Detection Limit?	/		
7. Do the MS/mSD results and yields meet acceptance criteria?		/	
8. Do the duplicate sample results and yields meet acceptance criteria?	/		
C. Other			
1. Are all Nonconformances included and noted?			/
2. Are all required forms filled out?	/		
3. Was the correct methodology used?	/		
4. Was transcription checked?	/		
5. Were all calculations checked at a minimum frequency?	/		
6. Were units checked?	/		

Comments on any "No" response:

Second Level Review:

Sherry R. Roben

Date: 12-18-06

STL 536403, Brown and Caldwell
Caldwell
AnalyDueDate: 12/18/2006
Batch: 633247 FILTER SEQ Batch, Test: None

Sample Preparation/Analysis

Balance Id:1120373922

Brown &

9N Thiso PrpRc5016, SepRC5003

\$1 Thorium-228,230,232 by Alpha Spec

01 STANDARD TEST SET

Alpha: _____

Pipe#: _____

Sep1 DT/Tm Tech:

PM, Quote: SA, 63174

PCi/samp

Prep Tech: WoodT

Work Order, Lot, Total Amt Acidified/Unit

Total Amt Acidified/Unit

Initial Aliquot Amt/Unit

Adj Aliq Amt (Un-Acidified)

QC Tracer Prep Date

Count Time Min

Detector Id

Count (24hr) Circle

CR Analyst, Init/Date

Comments:

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count (24hr) Circle	CR Analyst, Init/Date	Comments:
1 JKAGW-1-AA J6K220385-1-SAMP 10/24/2006 11:55	0.833sa	504.03sa	50.30g,in	0.0831g	THTF0871 11/10/06, pd 10/04/04,r	550				
2 JKAGI-1-AA J6K220385-2-SAMP 10/24/2006 12:10	0.833sa	508.95sa	50.07g,in	0.0819g	THTF0872 11/10/06, pd 10/04/04,r					
3 JKAG4-1-AA J6K220385-3-SAMP 10/24/2006 12:30	0.833sa	501.07sa	50.19g,in	0.0834g	THTF0873 11/10/06, pd 10/04/04,r					
4 JKAG7-1-AA J6K220385-4-SAMP 10/24/2006 12:35	0.833sa	504.67sa	50.08g,in	0.0827g	THTF0874 11/10/06, pd 10/04/04,r					
5 JKAHM-1-AA J6K220386-1-SAMP 10/30/2006 11:05	0.833sa	500.21sa	51.09g,in	0.0851g	THTF0875 11/10/06, pd 10/04/04,r					
6 JKJAHR-1-AA J6K220386-2-SAMP 10/30/2006 11:25	0.833sa,g	501.57sa,g	50.22g,in	0.0834g	THTF0881 11/10/06, pd 10/04/04,r					
7 JKJAHT-1-AA J6K220386-3-SAMP 10/30/2006 11:40	0.833sa	513.01sa	50.22g,in	0.0815g	THTF0882 11/10/06, pd 10/04/04,r					

STL Richland
Richland Wa.

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2
pd - Prep Dt, r - Prep Dt, ec-Enrichment Cell, ct-Cocktailed Added

ISV - Insufficient Volume for Analysis

WO Cnt: 7
Prep_SamplePrep v4.8.26

12/15/2006 1:57:01 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/15/2005, 12/20/2006, Batch: '6332247', User: *ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
6332247					
AC		CalcC	WoodT	11/30/2006 8:53:46	
SC		wagarr	IsBatched	11/28/2006 10:37:01 AM	ICOC_RADCALC v4.8.24
SC		WoodT	InPrep	11/30/2006 8:53:46 AM	RICH-RC-5016 REVISION 5
SC		WoodT	Prep2C	12/4/2006 8:53:25 AM	RICH-RC-5016 REVISION 5
SC		HarveyK	InSep1	12/6/2006 11:43:40 AM	RICH-RC-5087 REV0
SC		HarveyK	Sep1C	12/8/2006 8:15:15 AM	RICH-RC-5087 REV0
SC		FABREM	Sep2C	12/11/2006 5:31:17 PM	RICH-RC-5039 REVISION 4
SC		DAWKINSO	CalcC	12/13/2006 4:54:25 PM	RICH-RD-0008 REVISION 4
AC		WoodT		12/4/2006 8:53:25	
AC		HarveyK		12/6/2006 11:43:40	
AC		HarveyK		12/8/2006 8:15:15	
AC		FABREM		12/11/2006 5:31:17	
AC		DAWKINSO		12/13/2006 4:54:25	

AC: Accepting Entry, SC: Status Change

STL Richland
Richland Wa.Grp Rec Cnt: 6
ICOCPDFrac v4.8.26

12/15/2006 1:57:01 PM

Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id	Lot Sample Analysis Date	Client Id Result	Matrix	Received Date		Sample Date Units	Expected Yield	Volumess
					Cnt	Uncert			
33127	9JKAG110	J6K2203852	P-0783	FILTER	11/21/2006		10/24/2006 12:10:00 PM		
	RA-226	BXTE 0	12/12/2006 1:02:00 PM 1.081E-01	1.587E-01	1.591E-01	5.915E-01	PCI/SA	1.033	1.0E+0 2.456E-1
	RA-228	BXTF 0	12/13/2006 5:56:58 -9.3275E-02	3.353E-01	3.353E-01	1.728E+00	PCI/SA	0.949	1.0E+0 2.456E-1
	TH-228	9NS1 0	12/12/2006 12:37:00 2.3067E-01	1.048E-01	1.067E-01	2.516E-01	PCI/SA	0.92	1.0E+0 3.195E-2
	TH-230	9NS1 0	12/12/2006 12:37:00 1.598E-01	9.369E-02	9.469E-02	2.94E-01	PCI/SA	0.92	1.0E+0 3.195E-2
	TH-232	9NS1 0	12/12/2006 12:37:00 3.9949E-02	4.466E-02	4.48E-02	2.396E-01	PCI/SA	0.92	1.0E+0 3.195E-2
33127	9JKAG410	J6K2203853	P-0784	FILTER	11/21/2006		10/24/2006 12:30:00 PM		
	RA-226	BXTE 0	12/12/2006 1:06:00 PM 2.1612E-01	1.589E-01	1.606E-01	5.518E-01	PCI/SA	1.036	1.0E+0 2.494E-1
	RA-228	BXTF 0	12/13/2006 5:56:58 1.4597E+00	3.839E-01	4.165E-01	1.568E+00	PCI/SA	0.933	1.0E+0 2.494E-1
	TH-228	9NS1 0	12/12/2006 12:37:00 8.2605E-02	1.066E-01	1.069E-01	4.629E-01	PCI/SA	0.812	1.0E+0 3.344E-2
	TH-230	9NS1 0	12/12/2006 12:37:00 2.8851E-01	1.311E-01	1.336E-01	3.146E-01	PCI/SA	0.812	1.0E+0 3.344E-2
	TH-232	9NS1 0	12/12/2006 12:37:00 7.8685E-02	7.868E-02	7.9E-02	3.146E-01	PCI/SA	0.812	1.0E+0 3.344E-2
33127	9JKAG710	J6K2203854	000547	FILTER	11/21/2006		10/24/2006 12:35:00 PM		
	RA-226	BXTE 0	12/12/2006 1:12:00 PM 1.1649E-01	1.078E-01	1.085E-01	3.898E-01	PCI/SA	1.048	1.0E+0 2.486E-1
	RA-228	BXTF 0	12/13/2006 5:56:58 -2.4878E-01	3.255E-01	3.255E-01	1.726E+00	PCI/SA	0.948	1.0E+0 2.486E-1
	TH-228	9NS1 0	12/12/2006 12:37:00 3.5828E-01	1.372E-01	1.407E-01	2.865E-01	PCI/SA	0.966	1.0E+0 3.266E-2
	TH-230	9NS1 0	12/12/2006 12:37:00 1.3651E-01	8.203E-02	8.29E-02	2.729E-01	PCI/SA	0.966	1.0E+0 3.266E-2
	TH-232	9NS1 0	12/12/2006 12:37:00 1.3651E-01	8.203E-02	8.29E-02	2.729E-01	PCI/SA	0.966	1.0E+0 3.266E-2
33127	9JKAGW10	J6K2203851	P-0782	FILTER	11/21/2006		10/24/2006 11:55:00 AM		
	RA-226	BXTE 0	12/12/2006 1:11:00 PM 6.2171E-01	2.7E-01	2.774E-01	8.795E-01	PCI/SA	0.839	1.0E+0 2.481E-1
	RA-228	BXTF 0	12/13/2006 5:56:58 4.8303E-01	3.742E-01	4.146E-01	1.94E+00	PCI/SA	0.773	1.0E+0 2.481E-1
	TH-228	9NS1 0	12/12/2006 12:37:00 1.4306E-01	8.427E-02	8.516E-02	2.452E-01	PCI/SA	0.958	1.0E+0 3.313E-2
	TH-230	9NS1 0	12/12/2006 12:37:00 2.1414E-01	9.734E-02	9.906E-02	2.335E-01	PCI/SA	0.958	1.0E+0 3.313E-2
	TH-232	9NS1 0	12/12/2006 12:37:00 0.0E+00	0.0E+00	4.353E-02	2.335E-01	PCI/SA	0.958	1.0E+0 3.313E-2
33128	9JKAHM10	J6K2203861	P-0786	FILTER	11/21/2006		10/30/2006 11:05:00 AM		
	RA-226	BXTE 0	12/12/2006 1:32:00 PM 2.6637E-01	1.132E-01	1.168E-01	3.305E-01	PCI/SA	0.978	1.0E+0 2.504E-1
	RA-228	BXTF 0	12/13/2006 5:57:08 6.6355E-01	3.296E-01	3.49E-01	1.516E+00	PCI/SA	0.896	1.0E+0 2.504E-1
	TH-228	9NS1 0	12/12/2006 12:37:00 1.5117E-01	1.069E-01	1.077E-01	3.709E-01	PCI/SA	0.748	1.0E+0 3.508E-2
	TH-230	9NS1 0	12/12/2006 12:37:00 1.9314E-01	1.132E-01	1.145E-01	3.554E-01	PCI/SA	0.748	1.0E+0 3.508E-2
	TH-232	9NS1 0	12/12/2006 12:37:00 4.8284E-02	5.398E-02	5.415E-02	2.896E-01	PCI/SA	0.748	1.0E+0 3.508E-2
33128	9JKAHR10	J6K2203862	P-0787	FILTER	11/21/2006		10/30/2006 11:25:00 AM		
	RA-226	BXTE 0	12/12/2006 1:26:00 PM 4.8919E-01	1.674E-01	1.746E-01	4.325E-01	PCI/SA	0.952	1.0E+0 2.494E-1
	RA-228	BXTF 0	12/13/2006 5:57:08 6.3712E-01	3.283E-01	3.484E-01	1.523E+00	PCI/SA	0.874	1.0E+0 2.494E-1
	TH-228	9NS1 0	12/12/2006 12:37:00 2.729E-01	1.13E-01	1.155E-01	2.518E-01	PCI/SA	0.922	1.0E+0 3.34E-2
	TH-230	9NS1 0	12/12/2006 12:37:00 8.0461E-02	7.526E-02	7.558E-02	2.961E-01	PCI/SA	0.922	1.0E+0 3.34E-2
	TH-232	9NS1 0	12/12/2006 12:37:00 0.0E+00	0.0E+00	4.498E-02	2.413E-01	PCI/SA	0.922	1.0E+0 3.34E-2
33128	9JKAHT10	J6K2203863	P-0788	FILTER	11/21/2006		10/30/2006 11:40:00 AM		
	RA-226	BXTE 0	12/12/2006 1:33:00 PM 8.4953E-01	2.515E-01	2.648E-01	7.072E-01	PCI/SA	0.945	1.0E+0 2.438E-1
	RA-228	BXTF 0	12/13/2006 5:57:08 6.4491E-01	3.741E-01	3.749E-01	1.649E+00	PCI/SA	0.865	1.0E+0 2.438E-1
	TH-228	9NS1 0	12/12/2006 12:37:00 2.2247E-01	1.147E-01	1.164E-01	3.336E-01	PCI/SA	0.794	1.0E+0 3.154E-2
	TH-230	9NS1 0	12/12/2006 12:37:00 4.7965E-01	1.621E-01	1.676E-01	3.197E-01	PCI/SA	0.794	1.0E+0 3.154E-2
	TH-232	9NS1 0	12/12/2006 12:37:00 5.3294E-02	5.958E-02	5.977E-02	3.197E-01	PCI/SA	0.794	1.0E+0 3.154E-2
33128	9JKAHV10	J6K2203864	P-0789	FILTER	11/21/2006		10/30/2006 11:10:00 AM		
	RA-226	BXTE 0	12/12/2006 1:35:00 PM 7.035E-02	1.738E-01	1.739E-01	6.81E-01	PCI/SA	0.939	1.0E+0 2.479E-1
	RA-228	BXTF 0	12/13/2006 5:57:08 1.188E+00	3.952E-01	4.147E-01	1.645E+00	PCI/SA	0.835	1.0E+0 2.479E-1
	TH-228	9NS1 0	12/12/2006 12:37:00 5.7836E-02	6.466E-02	6.487E-02	3.469E-01	PCI/SA	0.628	1.0E+0 3.273E-2
	TH-230	9NS1 0	12/12/2006 12:37:00 3.3251E-01	1.385E-01	1.417E-01	3.324E-01	PCI/SA	0.628	1.0E+0 3.273E-2
	TH-232	9NS1 0	12/12/2006 12:37:00 2.7709E-02	6.196E-02	6.201E-02	3.324E-01	PCI/SA	0.628	1.0E+0 3.273E-2
33128	9JKAHW10	J6K2203865	000550	FILTER	11/21/2006		10/30/2006 11:45:00 AM		
	RA-226	BXTE 0	12/12/2006 1:53:00 PM 2.0095E-01	1.255E-01	1.274E-01	4.229E-01	PCI/SA	1.055	1.0E+0 2.496E-1
	RA-228	BXTF 0	12/13/2006 6:48:07 5.0342E-01	3.105E-01	3.151E-01	1.412E+00	PCI/SA	0.944	1.0E+0 2.496E-1
	TH-228	9NS1 0	12/13/2006 9:30:36 2.1523E-01	1.097E-01	1.113E-01	3.168E-01	PCI/SA	0.898	1.0E+0 3.379E-2

6332247, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 9,

**Results Inserted | ReTest|Inserted | Updated | NotInserted => 31 | 0 | 0 | 0.

**Dif: RptDb | Qtims => *wo:JKENG1AA=> , mat:FILTER | Air *wo:JKENG1AA=> , mat:FILTER | Air *wo:JKENG1AA=> , mat:FILTER | Air.

<i>SDG or Batch Isotope</i>	<i>Rpt Db Id Method</i>	<i>LotSample RTst Qc</i>	<i>Analysis Date</i>	<i>Client Id Result</i>	<i>Matrix Cnt Uncert</i>	<i>Tot Uncert</i>	<i>Mda</i>	<i>Received Date</i>	<i>Sample Date Units</i>	<i>Expected Yield</i>	<i>Volumes</i>		
TH-230	9NS1	0	12/13/2006 9:30:36	4.7394E-01	1.442E-01	1.5E-01	2.472E-01	PCI/SA	0.898	1.0E+0	3.379E-2		
TH-232	9NS1	0	12/13/2006 9:30:36	8.2424E-02	6.182E-02	6.223E-02	2.472E-01	PCI/SA	0.898	1.0E+0	3.379E-2		
33127	JKENG1AB	J6K280000247	INTRALAB BLANK	FILTER	11/21/2006			10/30/2006 11:05:00 AM					
TH-228	9NS1	0	B	12/12/2006 10:57:38	1.1979E-02	8.638E-03	8.706E-03	2.874E-02	PCI/SA	0.656	1.0E+0	1.0E+0	
TH-230	9NS1	0	B	12/12/2006 10:57:38	4.5893E-03	7.256E-03	7.268E-03	3.378E-02	PCI/SA	0.656	1.0E+0	1.0E+0	
TH-232	9NS1	0	B	12/12/2006 10:57:38	4.5892E-03	5.131E-03	5.148E-03	2.753E-02	PCI/SA	0.656	1.0E+0	1.0E+0	
33127	JKENG1CS	J6K280000247	INTRALAB CHECK	FILTER	11/21/2006			10/30/2006 11:05:00 AM					
TH-230	9NS1	0	S	12/12/2006 10:57:38	2.017E+00	1.42E-01	2.561E-01	5.974E-02	PCI/SA	1.8335E+00	0.357	1.0E+0	1.0E+0

6332247. **Samples Inserted | Updated | NotUpdated => 2 | 0 | 9,

**Results Inserted | ReTestInserted | Updated | NotInserted => 31 | 0 | 0 | 0.

**Diff RptDb | Qtims => *wo:JKENG1AA=> , mat:FILTER | Air *wo:JKENG1AA=> , mat:FILTER | Air *wo:JKENG1AA=> , mat:FILTER | Air.

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld	
ThIso by ALP		Richland Standard AlpIso Wo Blk Subt.													
Calc	S1	FILTER	JKAGW1AA	TH-228	1.43E-01	(8.52E-02)		PCI/SA	R	6.72E-02	2.45E-01		96%		
Calc	S1	FILTER	JKAGW1AA	TH-230	2.14E-01	(9.91E-02)		PCI/SA	R	6.40E-02	2.34E-01		96%		
Calc	S1	FILTER	JKAGW1AA	TH-232	0.00E+00	(4.35E-02)	U4	PCI/SA	R	6.40E-02	2.34E-01		96%		
Calc	S1	FILTER	JKAG11AA	TH-228	2.31E-01	(1.07E-01)		PCI/SA	R	6.90E-02	2.52E-01		92%		
Calc	S1	FILTER	JKAG11AA	TH-230	1.60E-01	(9.47E-02)		PCI/SA	R	9.29E-02	2.94E-01		92%		
Calc	S1	FILTER	JKAG11AA	TH-232	3.99E-02	(4.48E-02)	U4	PCI/SA	R	6.57E-02	2.40E-01		92%		
Calc	S1	FILTER	JKAG41AA	TH-228	8.26E-02	(1.07E-01)	U4	PCI/SA	R	1.57E-01	4.63E-01		81%		
Calc	S1	FILTER	JKAG41AA	TH-230	2.89E-01	(1.34E-01)		PCI/SA	R	8.63E-02	3.15E-01		81%		
Calc	S1	FILTER	JKAG41AA	TH-232	7.87E-02	(7.90E-02)	U4	PCI/SA	R	8.63E-02	3.15E-01		81%		
Calc	S1	FILTER	JKAG71AA	TH-228	3.58E-01	(1.41E-01)		PCI/SA	R	7.86E-02	2.87E-01		97%		
Calc	S1	FILTER	JKAG71AA	TH-230	1.37E-01	(8.29E-02)		PCI/SA	R	7.49E-02	2.73E-01		97%		
Calc	S1	FILTER	JKAG71AA	TH-232	1.37E-01	(8.29E-02)		PCI/SA	R	7.49E-02	2.73E-01		97%		
Calc	S1	FILTER	JKAHM1AA	TH-228	1.51E-01	(1.08E-01)	U4	PCI/SA	R	1.17E-01	3.71E-01		75%		
Calc	S1	FILTER	JKAHM1AA	TH-230	1.93E-01	(1.15E-01)		PCI/SA	R	1.12E-01	3.55E-01		75%		
Calc	S1	FILTER	JKAHM1AA	TH-232	4.83E-02	(5.42E-02)	U4	PCI/SA	R	7.94E-02	2.90E-01		75%		
Calc	S1	FILTER	JKAHR1AA	TH-228	2.73E-01	(1.15E-01)		PCI/SA	R	6.91E-02	2.52E-01		92%		
Calc	S1	FILTER	JKAHR1AA	TH-230	8.05E-02	(7.56E-02)	U4	PCI/SA	R	9.36E-02	2.96E-01		92%		
Calc	S1	FILTER	JKAHR1AA	TH-232	0.00E+00	(4.50E-02)	U4	PCI/SA	R	6.62E-02	2.41E-01		92%		
Calc	S1	FILTER	JKAHT1AA	TH-228	2.22E-01	(1.16E-01)		PCI/SA	R	9.15E-02	3.34E-01		79%		
Calc	S1	FILTER	JKAHT1AA	TH-230	4.80E-01	(1.68E-01)		PCI/SA	R	8.77E-02	3.20E-01		79%		
Calc	S1	FILTER	JKAHT1AA	TH-232	5.33E-02	(5.98E-02)	U4	PCI/SA	R	8.77E-02	3.20E-01		79%		
Calc	S1	FILTER	JKAHV1AA	TH-228	5.78E-02	(6.49E-02)	U4	PCI/SA	R	9.51E-02	3.47E-01		63%		
Calc	S1	FILTER	JKAHV1AA	TH-230	3.33E-01	(1.42E-01)		PCI/SA	R	9.12E-02	3.32E-01		63%		
Calc	S1	FILTER	JKAHV1AA	TH-232	2.77E-02	(6.20E-02)	U4	PCI/SA	R	9.12E-02	3.32E-01		63%		
Calc	S1	FILTER	JKAHW1AA	TH-228	2.15E-01	(1.11E-01)		PCI/SA	R	1.00E-01	3.17E-01		90%		
Calc	S1	FILTER	JKAHW1AA	TH-230	4.74E-01	(1.50E-01)		PCI/SA	R	6.78E-02	2.47E-01		90%		
Calc	S1	FILTER	JKAHW1AA	TH-232	8.24E-02	(6.22E-02)	U4	PCI/SA	R	6.78E-02	2.47E-01		90%		
Calc	S1	FILTER	JKENG1AA	TH-228	1.20E-02	(8.71E-03)	U4	PCI/SA	R	7.88E-03	2.87E-02	B	66%		
Calc	S1	FILTER	JKENG1AA	TH-230	4.59E-03	(7.27E-03)	U4	PCI/SA	R	1.07E-02	3.38E-02	B	66%		
Calc	S1	FILTER	JKENG1AA	TH-232	4.59E-03	(5.15E-03)	U4	PCI/SA	R	7.55E-03	2.75E-02	B	66%		
Calc	S1	FILTER	JKENG1AC	TH-230	2.02E+00	(2.56E-01)		PCI/SA	R	1.64E-02	5.97E-02	S	36%	110%	

P Anderson
12-15-06

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate	Pt/PtWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn						
1	Calc	S1	FILTER	*STLE	AlpIsoWoBs	JKAGW1AA	PCI/SA	FILTER	10/24/06 11:55	12/12/06 12:37														
0	536403,P-0782			Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay				
1	12/12/06 08:27	TH-228	4	ALP171	ED	N	N	2.9087E-01	(8.726E-03)	N	96%	N	6%	N	1.0000E+00	4.5045E-01	1.0498E+00							
2	12/12/06 08:27	TH-229	560	ALP171	ED	Y	N	2.9087E-01	(8.726E-03)	N	100%	N			1.0000E+00	4.5045E-01	1.0000E+00	(0.000E+00) 12.029384						
3	12/12/06 08:27	TH-230	6	ALP171	ED	N	N	2.9087E-01	(8.726E-03)	N	96%	N	6%	N	1.0000E+00	4.5045E-01	1.0000E+00	(0.000E+00) 12.029384						
4	12/12/06 08:27	TH-232	0	ALP171	ED	N	N	2.9087E-01	(8.726E-03)	N	96%	N	6%	N	1.0000E+00	4.5045E-01	1.0000E+00	(0.000E+00) 12.029384						
5	536403,P-0783			Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt/Rt	Dpm/Wo Blk	Dpm/Blk	Vol Used		Yield/EnFct	Chem Yld/EFctU	IDCALC	BkLCC/MDC	StdDMMdC/LcC					
6	12/13/06	TH-228	R	0.143063	(0.085158)	7.00749E-03	(4.1275E-03)	(0.014913)	(0.014913)	0.025149	(0.014142)	1.00 Sa	96%				0.245169							
7	12/13/06	TH-229	R	20.831117	(1.530445)	1.11819E+00	(4.7411E-02)	3.844347	(0.199674)	3.844347	(0.014142)	1.00 Sa	96%				0.067239							
8	12/13/06	TH-230	R	0.214142	(0.099062)	1.10118E-02	(5.0053E-03)	0.039519	(0.018166)	0.039519	(0.014142)	1.00 Sa	96%				0.233531							
9	12/13/06	TH-232	R	0.00E00	(0.04353)	U4	0.00000E+00	0.00E00	(0.008033)	0.00E00	(0.014142)	1.00 Sa	96%				0.064047							
10	536403,P-0783			Sq	Calc	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate	Pt/PtWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn		
11	12/12/06 08:27	TH-228	6	1	ALP172	ED	Y	(8.985E-03)	N	2.9949E-01	(8.985E-03)	N	92%	N	6%			1.0000E+00	4.5045E-01	1.0498E+00	(0.000E+00) 12.202604			
12	12/12/06 08:27	TH-229	563	4	ALP172	ED	Y	(8.985E-03)	N	2.9949E-01	(8.985E-03)	N	100%	N			1.0000E+00	4.5045E-01	1.0000E+00	(0.000E+00) 12.202604				
13	12/12/06 08:27	TH-230	5	2	ALP172	ED	N	(8.985E-03)	N	2.9949E-01	(8.985E-03)	N	92%	N	6%		1.0000E+00	4.5045E-01	1.0000E+00	(0.000E+00) 12.202604				
14	12/12/06 08:27	TH-232	1	0	ALP172	ED	N	(8.985E-03)	N	2.9949E-01	(8.985E-03)	N	92%	N	6%		1.0000E+00	4.5045E-01	1.0000E+00	(0.000E+00) 12.202604				
15	499.4666666 998.95			Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	Abn			
16	499.4666666 998.95			0	12/12/06 08:27	TH-228	499.4666666 998.95	499.4666666 998.95	ALP172	ED	Y	(8.985E-03)	N	2.9949E-01	(8.985E-03)	N	92%	N	6%		1.0000E+00	4.5045E-01	1.0498E+00	
17	499.4666666 998.95			1	12/12/06 08:27	TH-229	499.4666666 998.95	499.4666666 998.95	ALP172	ED	Y	(8.985E-03)	N	2.9949E-01	(8.985E-03)	N	92%	N	6%		1.0000E+00	4.5045E-01	1.0000E+00	
18	499.4666666 998.95			2	12/12/06 08:27	TH-230	499.4666666 998.95	499.4666666 998.95	ALP172	ED	Y	(8.985E-03)	N	2.9949E-01	(8.985E-03)	N	92%	N	6%		1.0000E+00	4.5045E-01	1.0000E+00	
19	499.4666666 998.95			3	12/12/06 08:27	TH-232	499.4666666 998.95	499.4666666 998.95	ALP172	ED	Y	(8.985E-03)	N	2.9949E-01	(8.985E-03)	N	92%	N	6%		1.0000E+00	4.5045E-01	1.0000E+00	

0 - (1s Uncertainties). Q - Qualifier, U - Result is Less Than Lc = 1.645 • TPU
 IDC - Instrument Detection Level in Conc Units, MLcc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration
 SR-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Page 1

RecCnt:2 RADCALC v4.8.26
 STL Richland

Alpha Spec, ThIsO by ALP , Calculated Results

Batch Nbr: 6332247

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/ILO.C	B1kLc/MDC	StdDvMdc/LCC		
12/13/06	TH-228	R	0.230668	(0.106705)	1.10118E-02	0.039973	0.039973	1.00 Sa	92%	0.25554	0.06999					
12/13/06	TH-229	R	20.614458	(1.513733)	1.12320E+00	3.750359	3.750359	1.00 Sa	92%							
12/13/06	TH-230	R	0.159797	(0.09469)	8.00858E-03	0.029072	0.029072	1.00 Sa	92%	0.294024						
12/13/06	TH-232	R	0.039949	(0.044796)	U4	2.00214E-03	0.007268	0.007268	1.00 Sa	92%	0.095936					
3	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG41AA	PCI/SA	10/24/06 12:30	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,P-0784		,6K220385-3 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	3	3	ALP173	ED	N	2.5374E-01	Efficiency 1	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	Abn
1	12/12/06 08:27	TH-229	422	3	ALP173	ED	Y	(7.612E-03)		N	81%	N	1.0000E+00	4.5045E-01	1.0498E+00	
2	12/12/06 08:27	TH-230	6	1	ALP173	ED	Y	N	2.5374E-01		5%	N	100%	(0.000E+00)	11.984949	
3	12/12/06 08:27	TH-232	2	1	ALP173	ED	N	2.5374E-01		N	81%	N	1.0000E+00	4.5045E-01	1.0000E+00	
4	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG71AA	PCI/SA	10/24/06 12:35	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,000547		,6K220385-4 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	8	1	ALP174	ED	N	2.4814E-01	Efficiency 1	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	Abn
1	THTF0873 Alq															
0	12/12/06 08:27	TH-229	17.912192	(1.386414)	8.41898E-01	3.31792	3.31792	1.00 Sa	81%							
1	12/12/06 08:27	TH-230	R	0.288512	(5.0053E-03)	1.10118E-02	0.053442	0.053442	1.00 Sa	81%	0.314636					
2	12/12/06 08:27	TH-232	R	0.078685	(0.078998)	U4	3.00322E-03	0.014575	0.014575	1.00 Sa	81%	0.314635				
3	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG71AA	PCI/SA	10/24/06 12:35	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,000547		,6K220385-4 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	499.46666666 998.95													
1	THTF0874 Alq															
0	12/12/06 08:27	TH-229	17.912192	(1.386414)	8.41898E-01	3.31792	3.31792	1.00 Sa	81%							
1	12/12/06 08:27	TH-230	R	0.288512	(5.0053E-03)	1.10118E-02	0.053442	0.053442	1.00 Sa	81%	0.314636					
2	12/12/06 08:27	TH-232	R	0.078685	(0.078998)	U4	3.00322E-03	0.014575	0.014575	1.00 Sa	81%	0.314635				
3	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG71AA	PCI/SA	10/24/06 12:35	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,000547		,6K220385-4 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	499.46666666 998.95													
1	THTF0874 Alq															
0	12/12/06 08:27	TH-229	17.912192	(1.386414)	8.41898E-01	3.31792	3.31792	1.00 Sa	81%							
1	12/12/06 08:27	TH-230	R	0.288512	(5.0053E-03)	1.10118E-02	0.053442	0.053442	1.00 Sa	81%	0.314636					
2	12/12/06 08:27	TH-232	R	0.078685	(0.078998)	U4	3.00322E-03	0.014575	0.014575	1.00 Sa	81%	0.314635				
3	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG71AA	PCI/SA	10/24/06 12:35	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,000547		,6K220385-4 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	499.46666666 998.95													
1	THTF0874 Alq															
0	12/12/06 08:27	TH-229	17.912192	(1.386414)	8.41898E-01	3.31792	3.31792	1.00 Sa	81%							
1	12/12/06 08:27	TH-230	R	0.288512	(5.0053E-03)	1.10118E-02	0.053442	0.053442	1.00 Sa	81%	0.314636					
2	12/12/06 08:27	TH-232	R	0.078685	(0.078998)	U4	3.00322E-03	0.014575	0.014575	1.00 Sa	81%	0.314635				
3	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG71AA	PCI/SA	10/24/06 12:35	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,000547		,6K220385-4 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	499.46666666 998.95													
1	THTF0874 Alq															
0	12/12/06 08:27	TH-229	17.912192	(1.386414)	8.41898E-01	3.31792	3.31792	1.00 Sa	81%							
1	12/12/06 08:27	TH-230	R	0.288512	(5.0053E-03)	1.10118E-02	0.053442	0.053442	1.00 Sa	81%	0.314636					
2	12/12/06 08:27	TH-232	R	0.078685	(0.078998)	U4	3.00322E-03	0.014575	0.014575	1.00 Sa	81%	0.314635				
3	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG71AA	PCI/SA	10/24/06 12:35	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,000547		,6K220385-4 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	499.46666666 998.95													
1	THTF0874 Alq															
0	12/12/06 08:27	TH-229	17.912192	(1.386414)	8.41898E-01	3.31792	3.31792	1.00 Sa	81%							
1	12/12/06 08:27	TH-230	R	0.288512	(5.0053E-03)	1.10118E-02	0.053442	0.053442	1.00 Sa	81%	0.314636					
2	12/12/06 08:27	TH-232	R	0.078685	(0.078998)	U4	3.00322E-03	0.014575	0.014575	1.00 Sa	81%	0.314635				
3	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG71AA	PCI/SA	10/24/06 12:35	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,000547		,6K220385-4 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	499.46666666 998.95													
1	THTF0874 Alq															
0	12/12/06 08:27	TH-229	17.912192	(1.386414)	8.41898E-01	3.31792	3.31792	1.00 Sa	81%							
1	12/12/06 08:27	TH-230	R	0.288512	(5.0053E-03)	1.10118E-02	0.053442	0.053442	1.00 Sa	81%	0.314636					
2	12/12/06 08:27	TH-232	R	0.078685	(0.078998)	U4	3.00322E-03	0.014575	0.014575	1.00 Sa	81%	0.314635				
3	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG71AA	PCI/SA	10/24/06 12:35	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,000547		,6K220385-4 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	499.46666666 998.95													
1	THTF0874 Alq															
0	12/12/06 08:27	TH-229	17.912192	(1.386414)	8.41898E-01	3.31792	3.31792	1.00 Sa	81%							
1	12/12/06 08:27	TH-230	R	0.288512	(5.0053E-03)	1.10118E-02	0.053442	0.053442	1.00 Sa	81%	0.314636					
2	12/12/06 08:27	TH-232	R	0.078685	(0.078998)	U4	3.00322E-03	0.014575	0.014575	1.00 Sa	81%	0.314635				
3	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG71AA	PCI/SA	10/24/06 12:35	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,000547		,6K220385-4 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	499.46666666 998.95													
1	THTF0874 Alq															
0	12/12/06 08:27	TH-229	17.912192	(1.386414)	8.41898E-01	3.31792	3.31792	1.00 Sa	81%							
1	12/12/06 08:27	TH-230	R	0.288512	(5.0053E-03)	1.10118E-02	0.053442	0.053442	1.00 Sa	81%	0.314636					
2	12/12/06 08:27	TH-232	R	0.078685	(0.078998)	U4	3.00322E-03	0.014575	0.014575	1.00 Sa	81%	0.314635				
3	Calc S1	FILTER	*STLE	AlpisWoB5 JKAG71AA	PCI/SA	10/24/06 12:35	QC/BB	Sa/On Date	AnalysisDate/PtWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
536403,000547		,6K220385-4 v4.8.26	FILTER			12/12/06 12:37										
0	12/12/06 08:27	TH-228	499.46666666 998.95													
1	THTF0874 Alq															
0	12/12/06 08:27	TH-229	17.912192	(1.386414)	8.41898E-01	3.31792	3.31792	1.								

Alpha Spec, ThIso by ALP , Calculated Results

12/15/2006 11:47:33 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm W/o Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EF+U	IDC/I.LcC	B.IkLcC/MDC	StdDMMdC/I.cC				
1	12/12/06 08:27	TH-229	489	3		ALP174 ED	Y	N 2.4814E-01 (7.444E-03)	N 100%	N	1.0000E+00 (0.000E+00)	4.5045E-01 12.097571	1.0000E+00 12.097571					
2	12/12/06 08:27	TH-230	3	0		ALP174 ED	N	N 2.4814E-01 (7.444E-03)	N 97%	N 6%	1.0000E+00 (0.000E+00)	4.5045E-01 12.097571	1.0000E+00 12.097571					
3	12/12/06 08:27	TH-232	3	0		ALP174 ED	N	N 2.4814E-01 (7.444E-03)	N 97%	N 6%	1.0000E+00 (0.000E+00)	4.5045E-01 12.097571	1.0000E+00 12.097571					
12/13/06	TH-228	R	0.358284 (0.140745)		1.50160E-02 (5.7507E-03)	0.062629 (0.024386)	0.062629 (0.024386)	1.00 Sa (0.014142)	97%	97%	0.286532 0.078583							
12/13/06	TH-229	R	21.434726 (1.612705)		9.76041E-01 (4.4308E-02)	3.933446 (0.21403)	3.933446 (0.21403)	1.00 Sa (0.014142)	97%	97%								
12/13/06	TH-230	R	0.136514 (0.082899)		6.00641E-03 (3.6094E-03)	0.025051 (0.015157)	0.025051 (0.015157)	1.00 Sa (0.014142)	97%	97%	0.272938 0.074855							
12/13/06	TH-232	R	0.136514 (0.082899)		6.00641E-03 (3.6094E-03)	0.025051 (0.015157)	0.025051 (0.015157)	1.00 Sa (0.014142)	97%	97%	0.272938 0.074855							
5	Calc	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB	SaOn Date	AnalysisDate/PriWT	Sept/Sep2 Date	QC/Tracer	Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	
536403,P-0786	536403,P-0786	Cal	S1	FILTER	*STILE	AlpsoWoBS	JKAHM1AA	PCI/SA	10/30/06 11:05	12/12/06 12:37	THTF0875 Alq	1	1.00 Sa	0.08508 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency 1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/12/06 08:27	TH-228	4	2	ALP175 ED	N	N 2.9360E-01 (8.808E-03)	N 75%	N 5%	N 100%	N 75%	N 100%	N 100%	N 1.0000E+00 (0.000E+00)	4.5045E-01 11.753615	1.0436E+00		
1	12/12/06 08:27	TH-229	446	3	ALP175 ED	Y	N 2.9360E-01 (8.808E-03)	N 100%	N 5%	N 100%	N 100%	N 100%	N 100%	N 1.0000E+00 (0.000E+00)	4.5045E-01 11.753615	1.0000E+00		
2	12/12/06 08:27	TH-230	5	2	ALP175 ED	N	N 2.9360E-01 (8.808E-03)	N 75%	N 5%	N 75%	N 75%	N 75%	N 75%	N 1.0000E+00 (0.000E+00)	4.5045E-01 11.753615	1.0000E+00		
3	12/12/06 08:27	TH-232	1	0	ALP175 ED	N	N 2.9360E-01 (8.808E-03)	N 75%	N 5%	N 75%	N 75%	N 75%	N 75%	N 1.0000E+00 (0.000E+00)	4.5045E-01 11.753615	1.0000E+00		
12/13/06	TH-228	R	0.151173 (0.107731)		U4	6.00644E-03 (4.2472E-03)	0.027359 (0.019445)	0.027359 (0.019445)	1.00 Sa (0.014142)	75%	75%	0.370874 0.117227						
12/13/06	TH-229	R	16.048261 (1.228621)		8.89949E-01 (4.2318E-02)	3.031167 (0.170423)	3.031167 (0.170423)	1.00 Sa (0.014142)	75%	75%								
12/13/06	TH-230	R	0.193135 (0.114521)		8.00858E-03 (4.6954E-03)	0.036479 (0.021547)	0.036479 (0.021547)	1.00 Sa (0.014142)	75%	75%	0.355366 0.112325							
12/13/06	TH-232	R	0.048284 (0.054152)		U4	2.00214E-03 (2.2384E-03)	0.00912 (0.010217)	0.00912 (0.010217)	1.00 Sa (0.014142)	75%	75%	0.289606 0.079426						

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(1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU

IDC - Instrument Detection Level in Conc Units, MDC - Minimum Detectable Concentration

SI-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/time - mm/dd/yy hh:mm, 24hr Time

RADCALC v4.8.26

STL Richland

Batch Nbr: 6332247

Alpha Spec, ThIso by ALP , Calculated Results

12/15/2006 11:47:33 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Count Vol				
6	Calc	S1	FILTER	*STILE	AlpsoWoBS	JKAHRTAA	PCI/SA	10/30/06 11:25	12/12/06 12:37								
					J6K220386-2 v4.8.26	FILTER											
0	12/12/06 08:27	TH-228	7		ALP176	ED	N	N	2.9146E-01 (8.744E-03)	N	92% 6%	N		1.0000E+00 (0.000E+00)	4.5045E-01 11.989742	1.0436E+00	
1	12/12/06 08:27	TH-229	547		ALP176	ED	Y	N	2.9146E-01 (8.744E-03)	N	100%	N		1.0000E+00 (0.000E+00)	4.5045E-01 11.989742	1.0000E+00	
2	12/12/06 08:27	TH-230	3		ALP176	ED	N	N	2.9146E-01 (8.744E-03)	N	92% 6%	N		1.0000E+00 (0.000E+00)	4.5045E-01 11.989742	1.0000E+00	
3	12/12/06 08:27	TH-232	0		ALP176	ED	N	N	2.9146E-01 (8.744E-03)	N	92% 6%	N		1.0000E+00 (0.000E+00)	4.5045E-01 11.989742	1.0000E+00	
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Val Used		Yield,EnFct	Chem Yld,EFctU	IDC/LCC	BILC/LCC/MDC	StdDyMdCLC		
12/13/06	TH-228	R	0.272905			1.30139E-02	0.048418	0.048418	1.00 Sa	92%				0.251829			
			(0.115468)			(5.3909E-03)	(0.020331)	(0.020331)	(0.014142)					0.063065			
12/13/06	TH-229	R	20.274998			1.09417E+00	3.754087	3.754087	1.00 Sa	92%							
			(1.494356)			(4.6837E-02)	(0.196233)	(0.196233)	(0.014142)								
12/13/06	TH-230	R	0.080461		U4	4.00430E-03	0.014898	0.014898	1.00 Sa	92%							
			(0.075582)			(3.7456E-03)	(0.013973)	(0.013973)	(0.014142)								
12/13/06	TH-232	R	0.00E00		U4	0.00000E+00	0.00E00	0.00E00	1.00 Sa	92%							
			(0.044979)			(2.2384E-03)	(0.008328)	(0.008328)	(0.014142)								
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Count Vol				
7	Calc	S1	FILTER	*STILE	AlpsoWoBS	JKAHT1AA	PCI/SA	10/30/06 11:40	12/12/06 12:37								
					J6K220386-3 v4.8.26	FILTER											
0	12/12/06 08:27	TH-228	4		ALP177	ED	N	N	2.6130E-01 (7.839E-03)	N	79% 5%	N		1.0000E+00 (0.000E+00)	4.5045E-01 12.263209	1.0436E+00	
1	12/12/06 08:27	TH-229	424		ALP177	ED	Y	N	2.6130E-01 (7.839E-03)	N	100%	N		1.0000E+00 (0.000E+00)	4.5045E-01 12.263209	1.0000E+00	
2	12/12/06 08:27	TH-230	9		ALP177	ED	N	N	2.6130E-01 (7.839E-03)	N	79% 5%	N		1.0000E+00 (0.000E+00)	4.5045E-01 12.263209	1.0000E+00	
3	12/12/06 08:27	TH-232	1		ALP177	ED	N	N	2.6130E-01 (7.839E-03)	N	79% 5%	N		1.0000E+00 (0.000E+00)	4.5045E-01 12.263209	1.0000E+00	

(1S Uncertainties), Q - Qualifier, U Result is Less Than Lo = 1.645 * TPU

DC - Instrument Detection Level in Conc Units, MDC - Minimum Detectable Concentration

SI-89 Counts are Derived from the Combination of Each Sr 89/90 and Y-90 Count, Alt Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

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RADCALC v4.8.26

STL Richland

Batch Nbr: 6332247

Alpha Spec, Thlso by ALP , Calculated Results

12/15/2006 11:47 33 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt/Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BikLcC/MDC	StdDvMdcLcC
12/13/06	TH-228	R	0.222475		8.00854E-03	0.038591	0.038591	1.00 Sa	79%			0.333602		
	(0.116365)	(4.1275E-03)	(0.020085)		(0.014142)							0.091492		
12/13/06	TH-229	R	17.924873		8.47904E-01	3.24493	3.24493	1.00 Sa	79%					
	(1.384452)	(4.1239E-02)	(0.185429)		(0.014142)									
12/13/06	TH-230	R	0.479649		1.80192E-02	0.08683	0.08683	1.00 Sa	79%			0.31966		
	(0.167638)		(6.0893E-03)	(0.03001)	(0.014142)							0.087668		
12/13/06	TH-232	R	0.053294		U4	2.00214E-03	0.009648	0.009648	1.00 Sa	79%		0.31966		
	(0.059774)	(2.2384E-03)	(0.010809)		(0.014142)							0.087668		
8	Calc	S1	FILTER	*STILE AlpsoWoBS JKAHV1AA	PCI/SA	10/30/06 11:10	12/12/06 12:37							
	536403,P-0789	J6K220386-4 1/4.8.26	FILTER											
0	12/12/06 08:27	TH-228	1	0	ALP178	ED	N	3.1338E-01	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct
								(9.401E-03)		N	63%	N		1.0000E+00
											4%			(0.000E+00)
1	12/12/06 08:27	TH-229	402	2	ALP178	ED	Y	N	3.1338E-01			N	100%	N
								(9.401E-03)						1.0000E+00
2	12/12/06 08:27	TH-230	6	0	ALP178	ED	N	3.1338E-01		N	63%	N		
								(9.401E-03)			4%			(0.000E+00)
3	12/12/06 08:27	TH-232	1	1	ALP178	ED	N	3.1338E-01		N	63%	N		
								(9.401E-03)			4%			(0.000E+00)
8	Calc	S1	FILTER	*STILE AlpsoWoBS JKAHV1AA	PCI/SA	10/30/06 11:10	12/12/06 12:37							
	536403,P-0789	J6K220386-4 1/4.8.26	FILTER											
0	12/13/06	TH-228	R	0.057836	U4	2.00214E-03	0.010178	0.010178	1.00 Sa	63%				
	(0.064871)	(2.2384E-03)	(0.011404)		(0.014142)									0.346901
														0.095139
12/13/06	TH-229	R	13.948553		8.02856E-01	2.561915	2.561915	1.00 Sa	63%					
	(1.089694)	(4.0168E-02)	(0.149452)		(0.014142)									
12/13/06	TH-230	R	0.332506		1.20128E-02	0.061071	0.061071	1.00 Sa	63%					
	(0.141736)		(5.0053E-03)	(0.025838)	(0.014142)									0.332396
12/13/06	TH-232	R	0.027709		U4	1.00108E-03	0.005089	0.005089	1.00 Sa	63%				
	(0.062009)	(2.2384E-03)	(0.011386)		(0.014142)									0.091161
9	Calc	S1	FILTER	*STILE AlpsoWoBS JKAHV1AA	PCI/SA	10/30/06 11:45	12/13/06 09:30							
	536403,000550	J6K220386-5 1/4.8.26	FILTER											
0	12/13/06 05:20	TH-228	6	2	ALP171	ED	N	2.9087E-01	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct
								(8.726E-03)			90%	N		1.0000E+00
											6%			(0.000E+00)
0	- (Is Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU													11.934031
DC - Instrument Detection Level in Conc Units, MLCC - Minimum Detectable Concentration, Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm 24hr Time														RADCALC v4.8.26
STL Richland														Page 5

Alpha Spec, ThIso by ALP , Calculated Results

12/15/2006 11:47:33 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDCfct	B1kLcc/MDC	StdDmDc/Lcc			
1	12/13/06 05:20	TH-229	532	2		ALP171	ED	Y	N	2.9087E-01 (8.726E-03)			1.0000E+00 (0.000E+00)	4.5045E-01 11.934031			
2	12/13/06 05:20	TH-230	12	1		ALP171	ED	N	N	2.9087E-01 (8.726E-03)	N	90% 6%	N	1.0000E+00 (0.000E+00)	4.5045E-01 11.934031		
3	12/13/06 05:20	TH-232	2	0		ALP171	ED	N	N	2.9087E-01 (8.726E-03)	N	90% 6%	N	1.0000E+00 (0.000E+00)	4.5045E-01 11.934031		
1	12/13/06	TH-228	R	0.215234 (0.111315)		1.00107E-02 (5.1045E-03)	0.038332 (0.019724)	0.038332 (0.019724)	1.00 Sa (0.014142)	90%				0.316822 0.100142			
1	12/13/06	TH-229	R	19.648421 (1.45565)		1.06313E+00 (4.6201E-02)	3.655055 (0.193012)	3.655055 (0.193012)	1.00 Sa (0.014142)	90%							
1	12/13/06	TH-230	R	0.47394 (0.149952)		2.30246E-02 (7.0075E-03)	0.088164 (0.027516)	0.088164 (0.027516)	1.00 Sa (0.014142)	90%				0.247191 0.067793			
1	12/13/06	TH-232	R	0.082424 (0.062228)		U4	4.00427E-03 (3.0032E-03)	0.015333 (0.011548)	0.015333 (0.011548)	1.00 Sa (0.014142)	90%			0.247191 0.067793			
10	Calc	Status Method Matrix	*STLE	AlpIsoWoBS	JKENG1AA	PCI/SA	B	10/30/06 11:05 J6K280000-247 FILTER	AnalysisDate/Pptwt AnalysisDate/SaOn Date	QC/BB	Wk Ord	Units/Matrix	QCfct	Final/Count Vol			
0	0	INTRA-LAB BLANK															
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	Abn
0	12/12/06 18:47	TH-228	3	1	ALP172	ED	N	N	2.9949E-01 (8.985E-03)	N	66%	N	4%		1.0000E+00 (0.000E+00)	4.5045E-01 1.00	
1	12/12/06 18:47	TH-229	398	4	ALP172	ED	Y	N	2.9949E-01 (8.985E-03)	N	100%	N			1.0000E+00 (0.000E+00)	4.5045E-01 1.00	
2	12/12/06 18:47	TH-230	2	2	ALP172	ED	N	N	2.9949E-01 (8.985E-03)	N	66%	N	4%		1.0000E+00 (0.000E+00)	4.5045E-01 1.00	
3	12/12/06 18:47	TH-232	1	0	ALP172	ED	N	N	2.9949E-01 (8.985E-03)	N	66%	N	4%		1.0000E+00 (0.000E+00)	4.5045E-01 1.00	
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDCfct	B1kLcc/MDC	StdDmDc/Lcc			
1	12/15/06	TH-228	R	0.011979 (0.008706)		U4	5.00536E-03 (3.6094E-03)	0.02547 (0.018462)	0.02547 (0.018462)	1.00 Sa (0.017321)	66%				0.028739 0.007882		
1	12/15/06	TH-229	R	1.192482 (0.094232)		7.92846E-01 (3.9993E-02)	2.647312 (0.155368)	2.647312 (0.155368)	1.00 Sa (0.017321)	66%							
1	12/15/06	TH-230	R	0.004589 (0.007268)		U4	2.00217E-03 (3.1656E-03)	0.010188 (0.016126)	0.010188 (0.016126)	1.00 Sa (0.017321)	66%						
1	12/15/06	TH-232	R	0.004589 (0.005148)		U4	2.00214E-03 (2.2384E-03)	0.010188 (0.011415)	0.010188 (0.011415)	1.00 Sa (0.017321)	66%						

{(Is Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 *TPU
 IDC - Instrument Detection Level in Conc Units, MDC - Minimum Detectable Concentration
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time}

Page 6
 RADCALC v4.8.26
 STL Richland
 RecCnt:11

SEVERN STL

THORIUM ISOTOPIC COUNTING REQUEST 1647

T R E N T

CBS

C.R. Technician 181012
Date Counted 12/12/06

SOP's
Counting Time 50 Minutes
Sample See Alpha Analysis Report Operating: RICHRD008

C.R. Analyst JL
Date Analyzed 12/12/06

6331A

WorkOrder #	Th-229 (4845 KeV) Tracer from Th-234 Beta Count (7)				TOTAL COUNTS				Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV)	Th-230 (4688 KeV)	Th-232 (4010 KeV)	(9)	
JKAH1A	10		0						171
JKAH1A	10		0						172
JKAH1A	10		0						173
JKAH1A	10		0						174
JKAH1A	10		0						175
JKAH1A	10		0						176
JKAH1A	10		0						177
JKAH1A	10		0						178
JKAH1A	10		0						

Comments:

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAGW1AA

Detector: ALP171 1
Report Date: 12-Dec-06 06:50 PM
Acquire Date: 12-DEC-2006 08:27:16.19
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

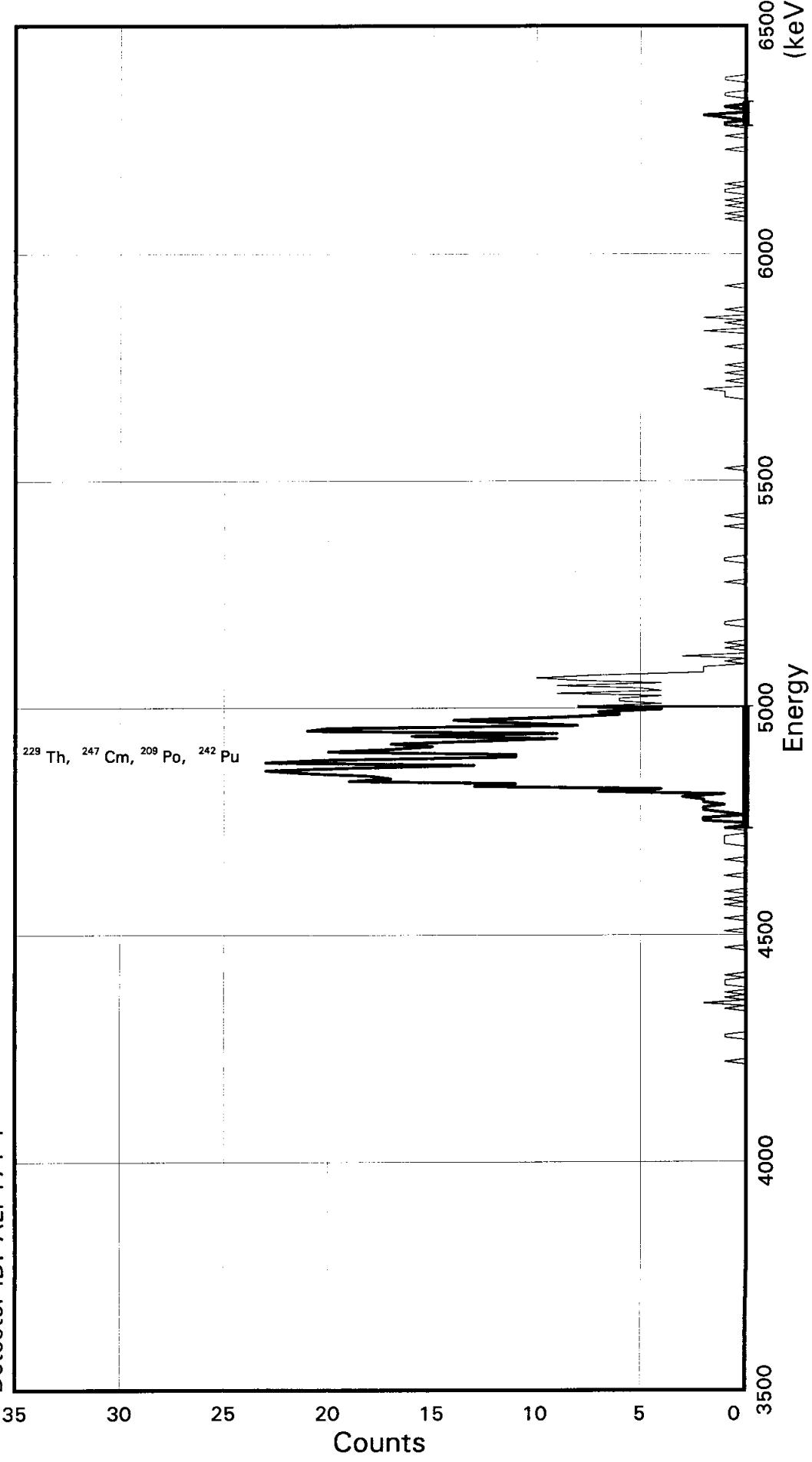
Nuclide Name	Smpl Count	Bkg Count	Rate C/Min	Centrd Energy keV	Width keV	Region	
						Left Chnl	Rght Chnl
TH-228	4	1	0.007	5423.2	134.0	313	336
TH-229	560	3	1.118	4845.3	401.1	215	284
TH-230	6	1	0.011	4687.7	121.9	190	211
TH-232	0	0	0.000	4013.0	115.7	73	93

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKAGW1AA
Detector ID: ALP171 1

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.50252E + 03
Slope: 5.77229E + 00
Quadrature: 8.30737E - 05

SAMPLE IDENTIITY: JKAGW1AA

TITLE : TH BRC

DETECTOR : ALP171 1
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKAGW1AA_121260827A.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:00:15

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3502.52 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 5.77229 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 8.307370E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JKAGW1AA

Flags Key

Detector:	ALP171 1	
Report Date:	12-Dec-06 04:47 PM	P: Peak Identified
Acquire Date:	12-DEC-2006 08:27:16.19	I: Peak Intersect
Tracer Nuclide:	TH-229	S: Single Non-peak Intersect
High Counts Limit:	36	M: Multiple Non-peak Intersect
Sample Live Time:	499 minutes	H: High Non-peak Sample Count
Bkgrnd Live Time:	999 minutes	A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Wdth Mult	Wdth Mult	Flags
PO-208	-9999	-9999	0	-10.010	5165.6	267.7	259	305	0.00	0.00	M
PO-209	474	2	0	0.947	4933.9	267.3	213	259	0.00	0.00	P
PO-210	-9999	-9999	0	-10.010	5355.1	267.9	292	338	0.00	0.00	M
AC-227	-9999	-9999	0	-10.010	6088.8	268.9	418	464	0.00	0.00	M
TH-227	-9999	-9999	0	-10.010	6088.8	268.9	418	464	0.00	0.00	M
TH-228	-9999	-9999	0	-10.010	5473.9	268.1	312	358	0.00	0.00	M
TH-229	474	2	0	0.947	4896.0	267.3	213	259	0.00	0.00	P
TH-230	-9999	-9999	0	-10.010	4738.4	267.1	186	232	0.00	0.00	M I
TH-232	0	1	0	-0.001	4063.7	272.0	69	116	0.00	0.00	S
U-232	-9999	-9999	0	-10.010	5370.9	268.0	295	341	0.00	0.00	M
U-234	-9999	-9999	0	-10.010	4825.3	267.2	201	247	0.00	0.00	M I
U-235	10	0	4	0.020	4448.5	266.7	136	182	0.00	0.00	S
PU-236	9	16	13	0.001	5818.4	268.5	371	417	0.00	0.00	S
NP-237	-9999	-9999	0	-10.010	4838.7	267.3	203	249	0.00	0.00	M I
PU-238	-9999	-9999	0	-10.010	5549.8	268.2	325	371	0.00	0.00	M
U-238	-9999	-9999	0	-10.010	4248.7	272.3	101	148	0.00	0.00	M
PU-239	-9999	-9999	0	-10.010	5207.3	261.9	267	312	0.00	0.00	M
AM-241	-9999	-9999	0	-10.010	5536.3	268.2	323	369	0.00	0.00	M
AM-242M	-9999	-9999	0	-10.010	5257.5	267.8	275	321	0.00	0.00	M
CM-242	-9999	-9999	0	-10.010	6163.5	263.1	431	476	0.00	0.00	M
PU-242	474	2	0	0.947	4951.2	267.3	213	259	0.00	0.00	P
AM-243	-9999	-9999	0	-10.010	5326.0	267.9	287	333	0.00	0.00	M
CM-244	-9999	-9999	0	-10.010	5855.6	268.6	378	424	0.00	0.00	M
CM-246	-9999	-9999	0	-10.010	5437.2	268.0	306	352	0.00	0.00	M
CM-247	474	2	0	0.947	4921.1	267.3	213	259	0.00	0.00	P
CM-248	-9999	-9999	0	-10.010	5129.3	267.6	253	299	0.00	0.00	M I

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JKAGW1AA

Flags Key

Detector: ALP171 1

Intersect Region: @

Report Date: 12-Dec-06 04:47 PM

Non-Intersect Region: +, -

Acquire Date: 12-DEC-2006 08:27:16.19

Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	Cnt F Chn	
1 0 51	0@ 101	0+ 151	1@ 201	20@ 251	0@ 301	0@ 351	2@ 401	0@ 451	0 501											
2 0 52	0@ 102	0+ 152	0@ 202	8@ 252	0@ 302	0@ 352	0@ 402	0@ 452	0 502											
0 3 0 53	0@ 103	1+ 153	0- 203	11- 253	0@ 303	0@ 353	0@ 403	1@ 453	0 503											
0 4 0 54	0@ 104	1+ 154	0@ 204	14@ 254	0@ 304	0@ 354	1@ 404	1@ 454	0 504											
0 5 0 55	0@ 105	1+ 155	0@ 205	9@ 255	0@ 305	0@ 355	0@ 405	0@ 455	0 505											
0 6 0 56	0@ 106	0+ 156	0@ 206	6@ 256	1- 306	0@ 356	2@ 406	1@ 456	0 506											
0 7 0 57	0@ 107	1+ 157	1@ 207	7@ 257	0@ 307	0@ 357	0@ 407	0@ 457	0 507											
0 8 0 58	0@ 108	0+ 158	1@ 208	4@ 258	0@ 308	0@ 358	0@ 408	0@ 458	0 508											
0 9 0 59	0@ 109	0+ 159	1@ 209	8@ 259	0@ 309	0@ 359	1@ 409	0@ 459	0 509											
0 10 0 60	0@ 110	0+ 160	1@ 210	4@ 260	0@ 310	0@ 360	0@ 410	0@ 460	0 510											
0 11 0 61	0@ 111	0+ 161	0@ 211	6@ 261	0@ 311	0@ 361	0@ 411	0@ 461	0 511											
0 12 0 62	0@ 112	0+ 162	0@ 212	6@ 262	0@ 312	0@ 362	0@ 412	0@ 462	0 512											
0 13 0 63	0@ 113	0+ 163	1@ 213	4@ 263	0@ 313	0@ 363	0@ 413	0@ 463												
0 14 0 64	0@ 114	0+ 164	0@ 214	9@ 264	1@ 314	0@ 364	0@ 414	0@ 464												
0 15 0 65	0@ 115	0+ 165	0@ 215	4@ 265	1@ 315	0@ 365	0@ 415	0- 465												
0 16 0 66	0@ 116	0+ 166	2@ 216	5@ 266	0@ 316	0@ 366	0@ 416	0- 466												
0 17 0 67	0- 117	1+ 167	2@ 217	9@ 267	0@ 317	0@ 367	0@ 417	0- 467												
0 18 0 68	0- 118	0+ 168	0@ 218	4@ 268	0@ 318	0@ 368	1@ 418	0- 468												
0 19 0+ 69	0- 119	0+ 169	1@ 219	8@ 269	0@ 319	0@ 369	0@ 419	1- 469												
0 20 0+ 70	0- 120	0+ 170	2@ 220	10@ 270	0@ 320	0+ 370	0@ 420	0- 470												
0 21 0+ 71	0- 121	0+ 171	2@ 221	7@ 271	0@ 321	0@ 371	0@ 421	0- 471												
0 22 0+ 72	0- 122	0+ 172	1@ 222	2@ 272	0@ 322	0+ 372	0@ 422	0- 472												
0 23 0+ 73	0- 123	0+ 173	2@ 223	2@ 273	0@ 323	0+ 373	0@ 423	0- 473												
0 24 0+ 74	1- 124	1+ 174	2@ 224	2@ 274	0@ 324	0+ 374	0@ 424	1- 474												
0 25 0+ 75	0- 125	0+ 175	3@ 225	0@ 275	0@ 325	0+ 375	0@ 425	0- 475												
0 26 0+ 76	0- 126	0+ 176	1@ 226	1@ 276	0@ 326	1+ 376	0@ 426	0- 476												
0 27 0+ 77	0- 127	0+ 177	7@ 227	0@ 277	1@ 327	1+ 377	0@ 427	0 477												
0 28 0+ 78	0- 128	0+ 178	4@ 228	3@ 278	0@ 328	1@ 378	0@ 428	1 478												
0 29 0+ 79	0- 129	1+ 179	13@ 229	0@ 279	0@ 329	2@ 379	0@ 429	1 479												
0 30 0+ 80	0- 130	0+ 180	11@ 230	0@ 280	0@ 330	0@ 380	0@ 430	0 480												
0 31 0+ 81	0- 131	0+ 181	19@ 231	1@ 281	1@ 331	0@ 381	0- 431	1 481												
0 32 0+ 82	0- 132	0+ 182	17@ 232	0@ 282	0@ 332	1@ 382	0@ 432	2 482												
0 33 0+ 83	1- 133	0 183	18@ 233	1@ 283	0@ 333	0@ 383	0@ 433	0 483												
0 34 0+ 84	1- 134	1 184	21@ 234	0@ 284	0@ 334	0@ 384	0@ 434	0 484												
0 35 0+ 85	0- 135	0 185	23@ 235	0@ 285	0@ 335	1@ 385	0@ 435	1 485												
0 36 0+ 86	0@ 136	1+ 186	19@ 236	0@ 286	0@ 336	0@ 386	0@ 436	0 486												
0 37 0+ 87	0@ 137	0+ 187	13@ 237	0@ 287	0@ 337	0@ 387	0@ 437	0 487												
0 38 0+ 88	0@ 138	0+ 188	23@ 238	0@ 288	0@ 338	1@ 388	0@ 438	0 488												
0 39 0+ 89	0@ 139	1+ 189	20@ 239	0@ 289	0@ 339	0@ 389	0@ 439	1 489												
0 40 0+ 90	0@ 140	0+ 190	11@ 240	1@ 290	0@ 340	0@ 390	0@ 440	1 490												
0 41 0+ 91	0@ 141	0+ 191	11@ 241	1@ 291	0@ 341	0@ 391	0@ 441	0 491												
0 42 0+ 92	0@ 142	0+ 192	20@ 242	0@ 292	0@ 342	0@ 392	0@ 442	0 492												
0 43 0+ 93	0@ 143	0+ 193	17@ 243	0@ 293	0@ 343	0@ 393	1@ 443	0 493												
0 44 0+ 94	1@ 144	0+ 194	15@ 244	0@ 294	0@ 344	0@ 394	0@ 444	0 494												
0 45 0+ 95	0@ 145	1+ 195	17@ 245	0@ 295	0@ 345	1@ 395	1@ 445	1 495												
0 46 0+ 96	2@ 146	0+ 196	13@ 246	0@ 296	0@ 346	0@ 396	0@ 446	1 496												
0 47 0+ 97	0@ 147	0+ 197	9@ 247	0@ 297	0@ 347	0@ 397	0@ 447	0 497												
0 48 0+ 98	1@ 148	0+ 198	16@ 248	0@ 298	0@ 348	0@ 398	1@ 448	0 498												
0 49 0+ 99	0+ 149	0+ 199	9@ 249	0@ 299	1@ 349	0@ 399	0@ 449	0 499												
0 50 0+ 100	1+ 150	0+ 200	21@ 250	0@ 300	0@ 350	0@ 400	1@ 450	0 500												

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:47:49

Configuration : \$DISK1:[ALP171.SAMPLE]JKAGW1AA_121260827A.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID : JKAGW1AA Sample quantity : 0.00000E+00 LITER
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3519.84 keV End energy : 6479.71 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4896.04	474		0144.31	240.58	213	46	1.58E-02	4.6	
2	0	6301.14		6	0 34.63	481.50	478	9	2.00E-04	40.8	

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:47:53

Configuration : \$DISK1:[ALP171.SAMPLE]JKAGW1AA_121260827A.CNF;1
 Analyses by : ALPHA V1.8, PEAKEFF V2.2, NID V3.3
 Sample title : TH BRC
 Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
 Sample ID : JKAGW1AA Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Energy tolerance : 80.00 keV Half life ratio : 1.00
 Errors propagated: No Systematic Error : 0.00 %
 Efficiency type : Spline Efficiencies at : Peak Energy
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	2
Number of unidentified lines	1
Number of lines tentatively identified by NID	1 50.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	%Error Flags
			-----	-----	-----	
			Total Activity :	0.000E+00	0.000E+00	

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	%Error Flags
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00
			-----	-----	-----	
			Total Activity :	0.000E+00	0.000E+00	
			Grand Total Activity :	0.000E+00	0.000E+00	

Flags: "K" = Keyline not found
 "E" = Manually edited

"M" = Manually accepted
 "A" = Nuclide specific abn. limit

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP171.SAMPLE]JKAGW1AA_121260827A.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4896.04	213	259	474	473	0.05		
6301.13	478	487	6	6	0.00		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAG11AA

Detector: ALP171 2
Report Date: 12-Dec-06 06:51 PM
Acquire Date: 12-DEC-2006 08:27:16.19
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

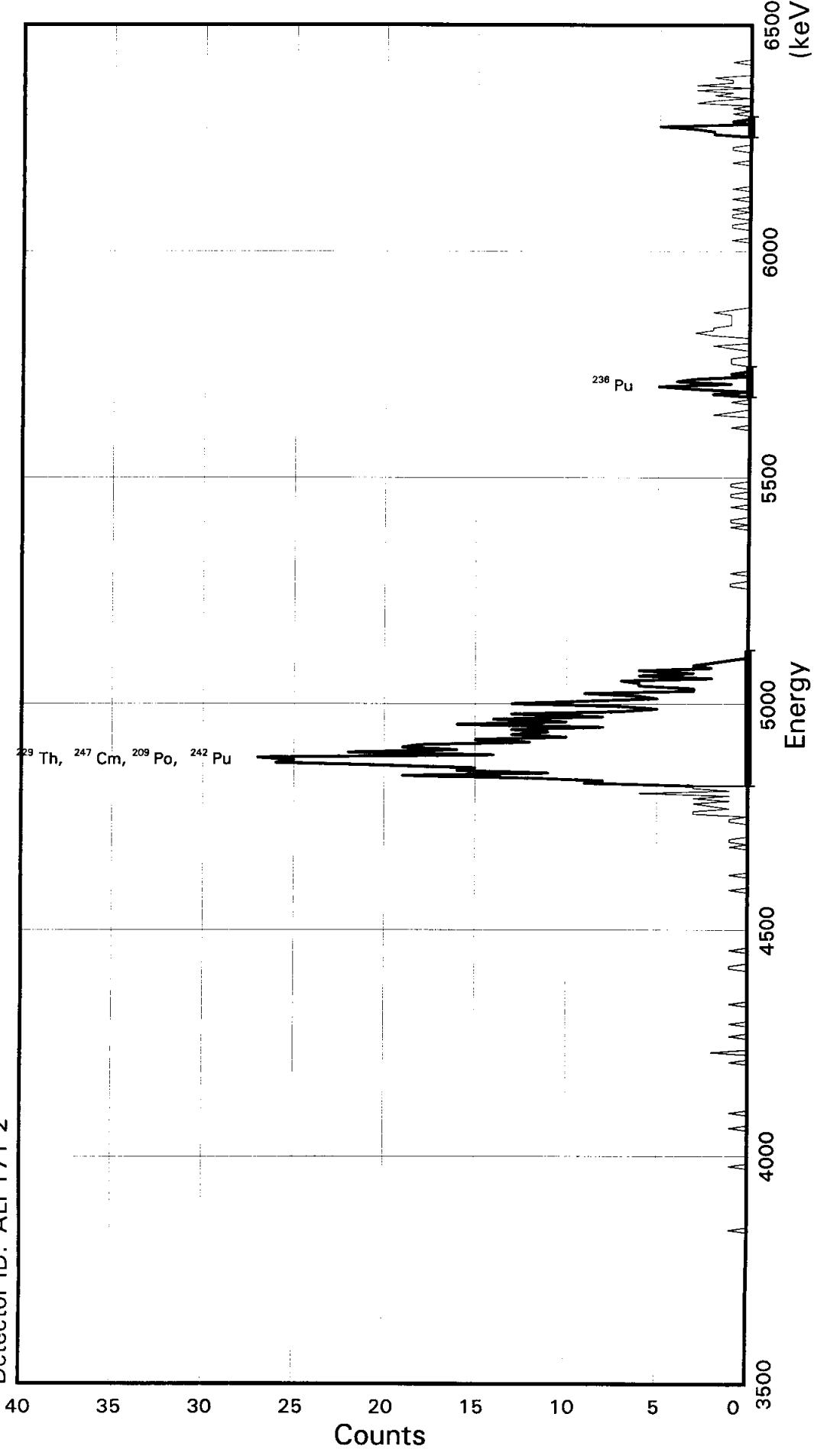
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	6	1	0.011	5423.2	130.1	320	343
TH-229	563	4	1.123	4845.3	377.8	213	280
TH-230	5	2	0.008	4687.7	129.5	186	209
TH-232	1	0	0.002	4013.0	112.1	69	89

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKAG11AA
Detector ID: ALP171 2

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.54083E + 03
Slope: 5.58786E + 00
Quadrature: 1.04264E-04

SAMPLE IDENTIITY: JKAG11AA

TITLE : TH BRC

DETECTOR : ALP171 2
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKAG11AA_121260827B.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:00:27

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3540.83 keV CONSTANT FWHM : 10.50000 Channels
SLOPE : 5.58786 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 1.042640E-04 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JKAG11AA

Flags Key

Detector:	ALP171 2	
Report Date:	12-Dec-06 04:48 PM	P: Peak Identified
Acquire Date:	12-DEC-2006 08:27:16.19	I: Peak Intersect
Tracer Nuclide:	TH-229	S: Single Non-peak Intersect
High Counts Limit:	36	M: Multiple Non-peak Intersect
Sample Live Time:	499 minutes	H: High Non-peak Sample Count
Bkgrnd Live Time:	999 minutes	A: Altered via ALP-RGN-EDIT

Nuclide	Smpl	Bkg	Intrsct	Count	Centrd	Region	Left	Rght					
Name	Count	Count	Count	Rate	Energy	Width	Left	Rght	Wdth	Wdth	Mult	Mult	Flags
				C/Min	keV	keV	Chnl	Chnl					
PO-208	-9999	-9999	0	-10.010	5149.5	299.5	276	329	0.00	0.00			M I
PO-209	536	3	0	1.070	4917.8	299.0	228	281	0.00	0.00			P
PO-210	-9999	-9999	0	-10.010	5339.0	299.9	309	362	0.00	0.00			M
AC-227	-9999	-9999	0	-10.010	6072.6	295.6	439	491	0.00	0.00			M
TH-227	-9999	-9999	0	-10.010	6072.6	295.6	439	491	0.00	0.00			M
TH-228	-9999	-9999	0	-10.010	5457.8	300.1	330	383	0.00	0.00			M I
TH-229	536	3	0	1.070	4879.9	299.0	228	281	0.00	0.00			P
TH-230	-9999	-9999	0	-10.010	4722.3	298.7	200	253	0.00	0.00			M I
TH-232	4	2	4	0.007	4047.6	297.3	80	133	0.00	0.00			S
U-232	-9999	-9999	0	-10.010	5354.8	299.9	312	365	0.00	0.00			M
U-234	-9999	-9999	0	-10.010	4809.2	298.8	215	268	0.00	0.00			M I
U-235	-9999	-9999	0	-10.010	4432.4	303.7	148	202	0.00	0.00			M
PU-236	18	11	0	0.025	5802.3	68.0	380	392	0.00	0.00			P
NP-237	-9999	-9999	0	-10.010	4822.6	298.9	218	271	0.00	0.00			M I
PU-238	-9999	-9999	0	-10.010	5533.6	300.3	344	397	0.00	0.00			M I
U-238	-9999	-9999	0	-10.010	4232.6	297.7	113	166	0.00	0.00			M
PU-239	-9999	-9999	0	-10.010	5191.2	299.6	283	336	0.00	0.00			M
AM-241	-9999	-9999	0	-10.010	5520.2	300.2	341	394	0.00	0.00			M I
AM-242M	-9999	-9999	0	-10.010	5241.4	299.7	292	345	0.00	0.00			M
CM-242	-9999	-9999	0	-10.010	6147.3	301.4	452	505	0.00	0.00			M
PU-242	536	3	0	1.070	4935.1	299.0	228	281	0.00	0.00			P
AM-243	-9999	-9999	0	-10.010	5309.9	299.8	304	357	0.00	0.00			M
CM-244	-9999	-9999	0	-10.010	5839.4	295.2	398	450	0.00	0.00			M
CM-246	-9999	-9999	0	-10.010	5421.1	300.0	324	377	0.00	0.00			M
CM-247	536	3	0	1.070	4905.0	299.0	228	281	0.00	0.00			P
CM-248	-9999	-9999	0	-10.010	5113.2	299.4	269	322	0.00	0.00			M I

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JKAG11AA

Flags Key

Detector: ALP171 2

Intersect Region: @

Report Date: 12-Dec-06 04:48 PM

Non-Intersect Region: +, -

Acquire Date: 12-DEC-2006 08:27:16.19

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	
1	0	51	0+	101	0@ 151	0@ 201	8@ 251	0@ 301	0@ 351	0- 401	1@ 451	3- 501												
2	0	52	0+	102	0@ 152	0@ 202	16@ 252	0@ 302	0@ 352	0- 402	0- 452	1- 502												
0	3	1 53	0+	103	0@ 153	0+ 203	10@ 253	0@ 303	0@ 353	0- 403	1@ 453	1- 503												
0	4	0 54	0+	104	0@ 154	1+ 204	14@ 254	0@ 304	0@ 354	2- 404	0@ 454	2- 504												
0	5	0 55	0+	105	0@ 155	0+ 205	8@ 255	0@ 305	0@ 355	3- 405	0@ 455	0- 505												
0	6	0 56	0+	106	1@ 156	1+ 206	13@ 256	1@ 306	0@ 356	2- 406	0@ 456	0 506												
0	7	0 57	0+	107	1@ 157	1+ 207	7@ 257	1@ 307	0@ 357	2- 407	1@ 457	0 507												
0	8	0 58	0+	108	0@ 158	0+ 208	5@ 258	0@ 308	0@ 358	1- 408	0@ 458	0 508												
0	9	0 59	0+	109	0@ 159	0+ 209	7@ 259	0@ 309	0@ 359	1- 409	0@ 459	0 509												
0	10	0 60	0+	110	0@ 160	0+ 210	13@ 260	0@ 310	0@ 360	1- 410	0@ 460	1 510												
0	11	0 61	0+	111	0@ 161	0+ 211	9@ 261	1@ 311	0@ 361	1- 411	1@ 461	0 511												
0	12	0 62	0+	112	0@ 162	0+ 212	5@ 262	0@ 312	0@ 362	1- 412	0@ 462	0 512												
0	13	0 63	0@ 113	1@ 163	0+ 213	6@ 263	0@ 313	0@ 363	2- 413	0@ 463														
0	14	0 64	0@ 114	0@ 164	1+ 214	9@ 264	0@ 314	0@ 364	1- 414	0@ 464														
0	15	0 65	0@ 115	0@ 165	1@ 215	3@ 265	0@ 315	0@ 365	0- 415	0@ 465														
0	16	0 66	0@ 116	0@ 166	0@ 216	3@ 266	0@ 316	0@ 366	0- 416	0@ 466														
0	17	0 67	0@ 117	0+ 167	3@ 217	6@ 267	0@ 317	0@ 367	0- 417	0@ 467														
0	18	0 68	0@ 118	0+ 168	3- 218	6@ 268	0@ 318	1@ 368	0- 418	0@ 468														
0	19	0 69	1@ 119	0+ 169	1@ 219	7- 269	0@ 319	0@ 369	0- 419	0@ 469														
0	20	0 70	0@ 120	0+ 170	2@ 220	2@ 270	0@ 320	0@ 370	0- 420	0@ 470														
0	21	0 71	0@ 121	0+ 171	3@ 221	6@ 271	0@ 321	0@ 371	0- 421	1@ 471														
0	22	0 72	0@ 122	0+ 172	1@ 222	3@ 272	0@ 322	0@ 372	0- 422	0@ 472														
0	23	0 73	2@ 123	0+ 173	3@ 223	6@ 273	0@ 323	2@ 373	0- 423	0@ 473														
0	24	0 74	0@ 124	0+ 174	1@ 224	2@ 274	0- 324	1@ 374	0- 424	0@ 474														
0	25	0 75	0@ 125	0+ 175	6@ 225	3@ 275	0@ 325	0@ 375	0- 425	0@ 475														
0	26	0 76	0@ 126	0+ 176	1@ 226	2@ 276	0@ 326	0@ 376	0- 426	1@ 476														
0	27	0 77	0@ 127	0+ 177	3@ 227	1@ 277	0@ 327	0@ 377	0- 427	1@ 477														
0	28	1 78	0@ 128	0+ 178	3@ 228	0@ 278	0@ 328	1@ 378	0- 428	0@ 478														
0	29	0 79	1@ 129	0+ 179	9@ 229	0@ 279	1@ 329	0@ 379	0- 429	0@ 479														
0	30	0+ 80	0@ 130	0+ 180	8@ 230	0@ 280	0@ 330	0@ 380	0- 430	0@ 480														
0	31	0+ 81	0@ 131	0+ 181	12@ 231	0@ 281	1@ 331	2@ 381	0- 431	0@ 481														
0	32	0+ 82	0@ 132	0+ 182	19@ 232	0@ 282	1@ 332	0@ 382	0- 432	2@ 482														
0	33	0+ 83	0@ 133	0+ 183	11@ 233	0@ 283	0@ 333	3@ 383	0- 433	2@ 483														
0	34	0+ 84	1- 134	0+ 184	16@ 234	0@ 284	0@ 334	5@ 384	0- 434	3@ 484														
0	35	0+ 85	0- 135	0+ 185	15@ 235	0@ 285	0@ 335	1@ 385	0- 435	5@ 485														
0	36	0+ 86	0- 136	0+ 186	20@ 236	0@ 286	0@ 336	4@ 386	0- 436	0@ 486														
0	37	0+ 87	0- 137	1+ 187	26@ 237	0@ 287	1@ 337	3@ 387	0- 437	1@ 487														
0	38	0+ 88	0- 138	0+ 188	25@ 238	0@ 288	0@ 338	0@ 388	0- 438	0@ 488														
0	39	0+ 89	0- 139	0+ 189	27@ 239	0@ 289	0@ 339	1@ 389	0@ 439	0@ 489														
0	40	0+ 90	0- 140	0+ 190	14@ 240	0@ 290	0@ 340	0@ 390	0@ 440	1@ 490														
0	41	0+ 91	0- 141	0+ 191	22@ 241	0@ 291	1@ 341	0@ 391	1@ 441	0@ 491														
0	42	0+ 92	1- 142	0+ 192	16@ 242	0@ 292	1@ 342	0@ 392	0@ 442	1- 492														
0	43	1+ 93	0- 143	1+ 193	19@ 243	0@ 293	0@ 343	1@ 393	0@ 443	0- 493														
0	44	0+ 94	0- 144	0+ 194	18@ 244	0@ 294	0@ 344	1@ 394	0@ 444	3- 494														
0	45	0+ 95	0- 145	0+ 195	12@ 245	0@ 295	1@ 345	1+ 395	0@ 445	2- 495														
0	46	0+ 96	0- 146	0+ 196	15@ 246	0@ 296	1@ 346	0+ 396	1@ 446	0- 496														
0	47	0+ 97	0- 147	0+ 197	10@ 247	0@ 297	0@ 347	0+ 397	1@ 447	2- 497														
0	48	0+ 98	0@ 148	0+ 198	13@ 248	0@ 298	0@ 348	0- 398	0@ 448	1- 498														
0	49	1+ 99	0@ 149	0+ 199	11@ 249	0@ 299	0@ 349	1- 399	0@ 449	3- 499														
0	50	0+ 100	0@ 150	0@ 200	13@ 250	0@ 300	0@ 350	2- 400	1@ 450	0- 500														

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:47:57

Configuration : \$DISK1:[ALP171.SAMPLE]JKAG11AA_121260827B.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID : JKAG11AA Sample quantity : 0.00000E+00 LITER
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3557.59 keV End energy : 6429.15 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4879.91	536	0	89.41	238.58	228	53	1.79E-02	4.3	
2	0	5705.34	18	0	33.53	384.60	380	12	6.01E-04	23.6	
3	0	6270.25	13	0	27.94	484.08	481	8	4.34E-04	27.7	

Configuration : \$DISK1:[ALP171.SAMPLE]JKAG11AA_121260827B.CNF;1
 Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
 Sample title : TH BRC
 Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
 Sample ID : JKAG11AA Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Energy tolerance : 80.00 keV Half life ratio : 1.00
 Errors propagated: No Systematic Error : 0.00 %
 Efficiency type : Spline Efficiencies at : Peak Energy
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	3
Number of unidentified lines	1
Number of lines tentatively identified by NID	2
	66.67%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	%Error
			-----	-----	-----	Flags
Total Activity :			0.000E+00	0.000E+00		

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	%Error
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00
			-----	-----	-----	Flags
Total Activity :			0.000E+00	0.000E+00		

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found
"E" = Manually edited"M" = Manually accepted
"A" = Nuclide specific abn. limit

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP171.SAMPLE]JKAG11AA_121260827B.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4879.91	228	281	536	534	0.09		
5705.34	380	392	18	19	-0.24		
6270.25	481	489	13	13	0.00		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAG41AA

Detector: ALP171 3

Report Date: 12-Dec-06 06:51 PM

Acquire Date: 12-DEC-2006 08:27:16.19

Tracer Nuclide: TH-229

Sample Live Time: 499 minutes

Bkgrnd Live Time: 999 minutes

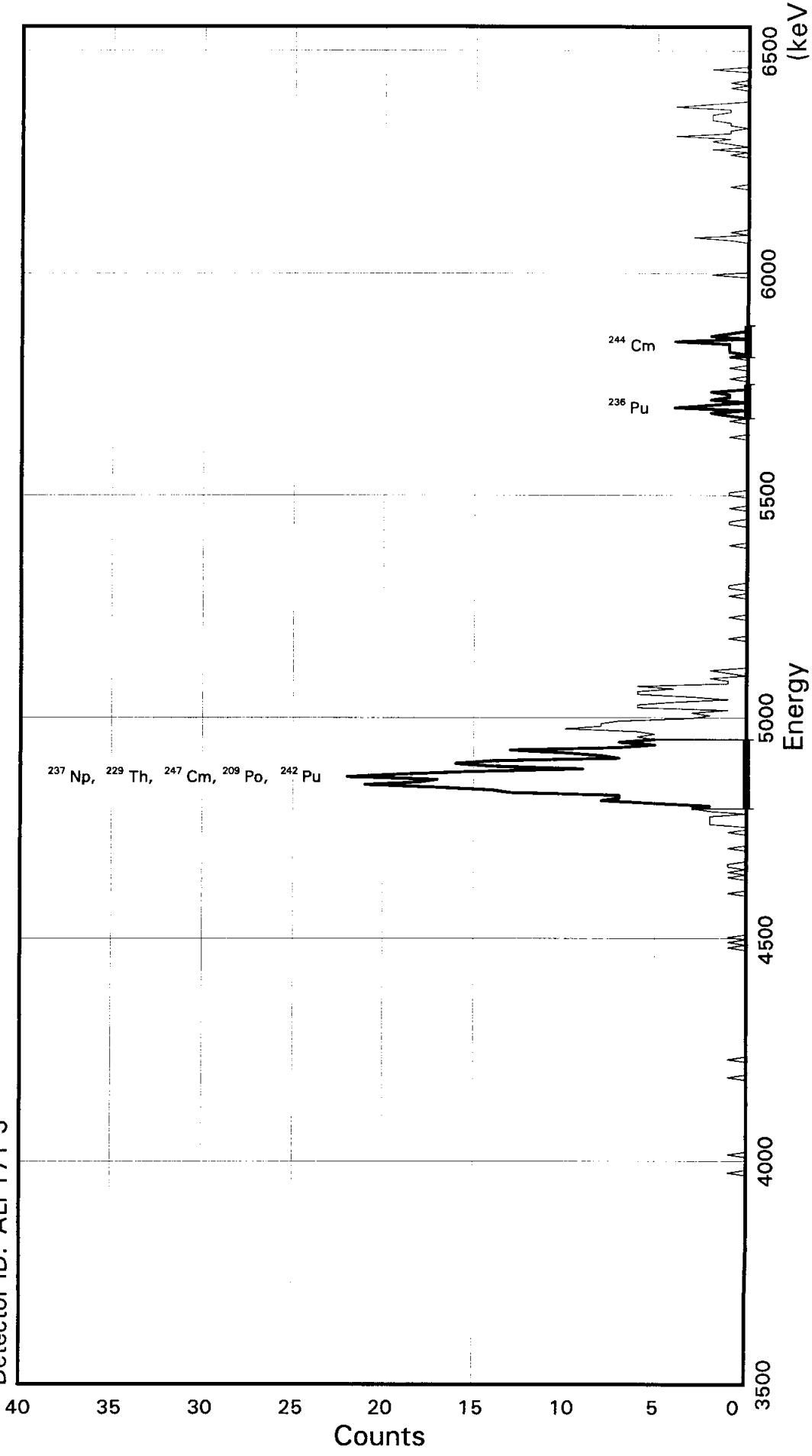
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	3	3	0.003	5423.2	119.5	308	328
TH-229	422	3	0.842	4845.3	381.9	208	272
TH-230	6	1	0.011	4687.7	119.3	185	205
TH-232	2	1	0.003	4013.0	119.0	72	92

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKAG41AA
Detector ID: ALP171 3

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.49774E + 03
Slope: 5.94170E + 00
Quadrature: 5.38613E-05

SAMPLE IDENTIITY: JKAG41AA

TITLE : TH BRC

DETECTOR : ALP171 3
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKAG41AA_121260827C.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:00:42

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3497.74 keV CONSTANT FWHM : 9.50000 Channels
SLOPE : 5.94170 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 5.386130E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JKAG41AA

Flags Key

Detector:	ALP171 3	
Report Date:	12-Dec-06 04:48 PM	P: Peak Identified
Acquire Date:	12-DEC-2006 08:27:16.19	I: Peak Intersect
Tracer Nuclide:	TH-229	S: Single Non-peak Intersect
High Counts Limit:	36	M: Multiple Non-peak Intersect
Sample Live Time:	499 minutes	H: High Non-peak Sample Count
Bkgrnd Live Time:	999 minutes	A: Altered via ALP-RGN-EDIT

Nuclide	Smpl	Bkg	Intrsct	Count	Centrd	Region	Left	Rght	Wdth	Wdth	Flags	
Name	Count	Count	Count	Rate	Energy	Width	Left	Rght	Chnl	Chnl	Mult	Mult
				C/Min	keV	keV	Chnl	Chnl				
PO-208	-9999	-9999	0	-10.010	5137.4	155.3	263	289	0.00	0.00	M	
PO-209	319	1	0	0.638	4905.7	155.1	218	244	0.00	0.00	P	
PO-210	-9999	-9999	0	-10.010	5326.9	155.3	295	321	0.00	0.00	M	
AC-227	5	1	5	0.008	6060.5	149.7	418	443	0.00	0.00	S	
TH-227	5	1	5	0.008	6060.5	149.7	418	443	0.00	0.00	S	
TH-228	-9999	-9999	0	-10.010	5445.7	155.4	315	341	0.00	0.00	M	
TH-229	319	1	0	0.638	4867.8	155.1	218	244	0.00	0.00	P	
TH-230	12	1	14	0.024	4710.2	155.1	192	218	0.00	0.00	S	
TH-232	2	1	0	0.003	4035.5	154.7	78	104	0.00	0.00		
U-232	-9999	-9999	0	-10.010	5342.7	155.4	298	324	0.00	0.00	M	
U-234	-9999	-9999	0	-10.010	4797.1	155.1	206	232	0.00	0.00	S I	
U-235	3	1	0	0.005	4420.3	154.9	143	169	0.00	0.00		
PU-236	15	12	0	0.018	5790.2	77.8	365	378	0.00	0.00	P	
NP-237	319	1	0	0.638	4810.5	155.1	218	244	0.00	0.00	P	
PU-238	-9999	-9999	0	-10.010	5521.5	155.4	327	353	0.00	0.00	M	
U-238	2	0	0	0.004	4220.5	154.8	109	135	0.00	0.00		
PU-239	-9999	-9999	0	-10.010	5179.1	155.3	270	296	0.00	0.00	M	
AM-241	-9999	-9999	0	-10.010	5508.1	155.4	325	351	0.00	0.00	M	
AM-242M	-9999	-9999	0	-10.010	5229.3	155.3	279	305	0.00	0.00	M	
CM-242	-9999	-9999	0	-10.010	6135.2	155.7	430	456	0.00	0.00	M	
PU-242	319	1	0	0.638	4923.0	155.1	218	244	0.00	0.00	P	
AM-243	-9999	-9999	0	-10.010	5297.8	155.3	290	316	0.00	0.00	M	
CM-244	12	7	0	0.017	5827.3	71.8	388	400	0.00	0.00	P	
CM-246	-9999	-9999	0	-10.010	5409.0	155.4	309	335	0.00	0.00	M	
CM-247	319	1	0	0.638	4892.9	155.1	218	244	0.00	0.00	P	
CM-248	-9999	-9999	0	-10.010	5101.1	155.2	257	283	0.00	0.00	M	

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JKAG41AA

Flags Key

Detector: ALP171 3

Report Date: 12-Dec-06 04:48 PM

Intersect Region: @

Acquire Date: 12-DEC-2006 08:27:16.19

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
	1	0	51	0+	101	0+	151	0+	201	7	251	1@	301	0@	351	0	401	0-	451	0	501					
	2	0	52	0+	102	0+	152	0+	202	3	252	1@	302	0+	352	0	402	1-	452	0	502					
0	3	0	53	0+	103	0+	153	1+	203	2	253	0@	303	0+	353	0	403	0-	453	0	503					
0	4	0	54	0+	104	0+	154	0+	204	3	254	0@	304	0	354	0	404	0-	454	0	504					
0	5	0	55	0	105	0+	155	0+	205	1	255	0@	305	0	355	0	405	0-	455	0	505					
0	6	0	56	0	106	0+	156	0@	206	6	256	0@	306	0	356	0	406	0-	456	0	506					
0	7	0	57	0	107	0+	157	0@	207	6+	257	0@	307	0	357	0	407	0	457	0	507					
0	8	0	58	0	108	0+	158	0@	208	4+	258	0@	308	1	358	0	408	0	458	0	508					
0	9	0	59	0+	109	0+	159	1@	209	1+	259	0-	309	0	359	0	409	0	459	0	509					
0	10	0	60	0+	110	0+	160	0@	210	3+	260	0@	310	0	360	0	410	0	460	0	510					
0	11	0	61	0+	111	0+	161	0@	211	6+	261	0@	311	0	361	0	411	0	461	0	511					
0	12	0	62	0+	112	0+	162	2@	212	6+	262	0@	312	0	362	0	412	0	462	0	512					
0	13	0	63	0+	113	0+	163	2@	213	4@	263	0@	313	0	363	0	413	0	463							
0	14	0	64	0+	114	0+	164	2@	214	6@	264	0@	314	1	364	0	414	1	464							
0	15	0	65	0+	115	1+	165	2@	215	1@	265	0@	315	0+	365	0	415	0	465							
0	16	0	66	1+	116	0+	166	0@	216	1@	266	0@	316	1+	366	0	416	2	466							
0	17	0	67	0+	117	1+	167	2@	217	2@	267	1@	317	2+	367	0	417	0	467							
0	18	0	68	0+	118	0+	168	3-	218	0@	268	0@	318	0+	368	0@	418	1	468							
0	19	0	69	0+	119	1+	169	2@	219	1@	269	0@	319	4+	369	2@	419	2	469							
0	20	0	70	0+	120	0	170	5@	220	2@	270	0@	320	2+	370	0@	420	1	470							
0	21	0	71	0+	121	0	171	8@	221	0@	271	0@	321	0+	371	0@	421	4	471							
0	22	0	72	0+	122	0	172	7@	222	0@	272	0@	322	2+	372	0@	422	1	472							
0	23	0	73	1+	123	0	173	7@	223	0@	273	0@	323	1+	373	0@	423	1	473							
0	24	0	74	0+	124	0	174	13@	224	0@	274	0@	324	1+	374	0@	424	0	474							
0	25	0	75	0+	125	0	175	14@	225	0@	275	1@	325	2+	375	0@	425	1	475							
0	26	0	76	0+	126	0	176	17@	226	0@	276	1@	326	0+	376	0@	426	1	476							
0	27	0	77	0+	127	0	177	21@	227	0@	277	0@	327	0+	377	0@	427	2	477							
0	28	0+	78	0+	128	0	178	18@	228	0@	278	0@	328	0	378	0@	428	2	478							
0	29	0+	79	0+	129	0	179	17@	229	0@	279	0@	329	0	379	0@	429	2	479							
0	30	1+	80	0+	130	0	180	22@	230	0@	280	0@	330	1	380	0-	430	1	480							
0	31	0+	81	0+	131	0	181	19@	231	0@	281	1@	331	0	381	0@	431	1	481							
0	32	0+	82	0+	132	0	182	15@	232	1@	282	0@	332	0	382	1@	432	4	482							
0	33	0+	83	0+	133	0	183	9@	233	0@	283	0@	333	0	383	3@	433	2	483							
0	34	0+	84	0+	134	0	184	14@	234	0@	284	0@	334	1	384	0@	434	0	484							
0	35	0+	85	0+	135	0	185	16@	235	0@	285	0@	335	0	385	1@	435	0	485							
0	36	0+	86	0	136	1	186	14@	236	0@	286	1@	336	0	386	0@	436	0	486							
0	37	1+	87	0	137	0	187	7@	237	0@	287	1@	337	0	387	0@	437	0	487							
0	38	0+	88	0	138	0	188	8@	238	0@	288	0@	338	1+	388	0@	438	0	488							
0	39	0+	89	0	139	0	189	10@	239	0@	289	0@	339	0+	389	0@	439	1	489							
0	40	0+	90	0	140	0	190	13@	240	1-	290	0@	340	1+	390	0@	440	0	490							
0	41	0+	91	0	141	0	191	7@	241	0@	291	0@	341	1+	391	0@	441	1	491							
0	42	0+	92	0	142	1+	192	5@	242	0@	292	0@	342	1+	392	0@	442	0	492							
0	43	0+	93	0+	143	0+	193	7@	243	0@	293	0@	343	1+	393	0@	443	0	493							
0	44	0+	94	0+	144	1+	194	5	244	0@	294	0@	344	4+	394	0-	444	0	494							
0	45	0+	95	0+	145	0+	195	6	245	0@	295	0@	345	0+	395	0-	445	0	495							
0	46	0+	96	0+	146	1+	196	5	246	0@	296	0@	346	2+	396	0-	446	2	496							
0	47	0+	97	0+	147	1+	197	6	247	0@	297	0@	347	1+	397	0-	447	0	497							
0	48	0+	98	0+	148	0+	198	10	248	1@	298	0@	348	0+	398	0-	448	0	498							
0	49	0+	99	0+	149	0+	199	8	249	0@	299	0@	349	0+	399	0-	449	0	499							
0	50	0+	100	0+	150	0+	200	8	250	0@	300	0@	350	0	400	0-	450	0	500							

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:04

Configuration : \$DISK1:[ALP171.SAMPLE]JKAG41AA_121260827C.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID : JKAG41AA Sample quantity : 0.00000E+00 LITER
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3515.56 keV End energy : 6554.00 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4867.81	319	0	83.18	230.11	218	26	1.06E-02	5.6	
2	0	5698.05	15	0	41.59	369.08	365	13	5.01E-04	25.8	
3	0	5838.75	12	0	41.59	392.60	388	12	4.00E-04	28.9	

Configuration : \$DISK1:[ALP171.SAMPLE]JKAG41AA_121260827C.CNF;1
 Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
 Sample title : TH BRC
 Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
 Sample ID : JKAG41AA Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Energy tolerance : 80.00 keV Half life ratio : 1.00
 Errors propagated: No Systematic Error : 0.00 %
 Efficiency type : Spline Efficiencies at : Peak Energy
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	3
Number of unidentified lines	0
Number of lines tentatively identified by NID	3 100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma	%Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00		0.00	
			-----	-----	-----			
			Total Activity :	0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma	%Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00		0.00	
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00		0.00	
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00		0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00		0.00	
CM-244	18.10Y	1.01	0.000E+00	0.000E+00	0.000E+00		0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00		0.00	
			-----	-----	-----			
			Total Activity :	0.000E+00	0.000E+00			

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found
 "E" = Manually edited

"M" = Manually accepted
 "A" = Nuclide specific abn. limit

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP171.SAMPLE]JKAG41AA_121260827C.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4867.80	218	244	319	303	0.90		
5698.05	365	378	15	15	0.00		
5838.74	388	400	12	12	0.00		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAG71AA

Detector: ALP171 4
Report Date: 12-Dec-06 06:52 PM
Acquire Date: 12-DEC-2006 08:27:16.19
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

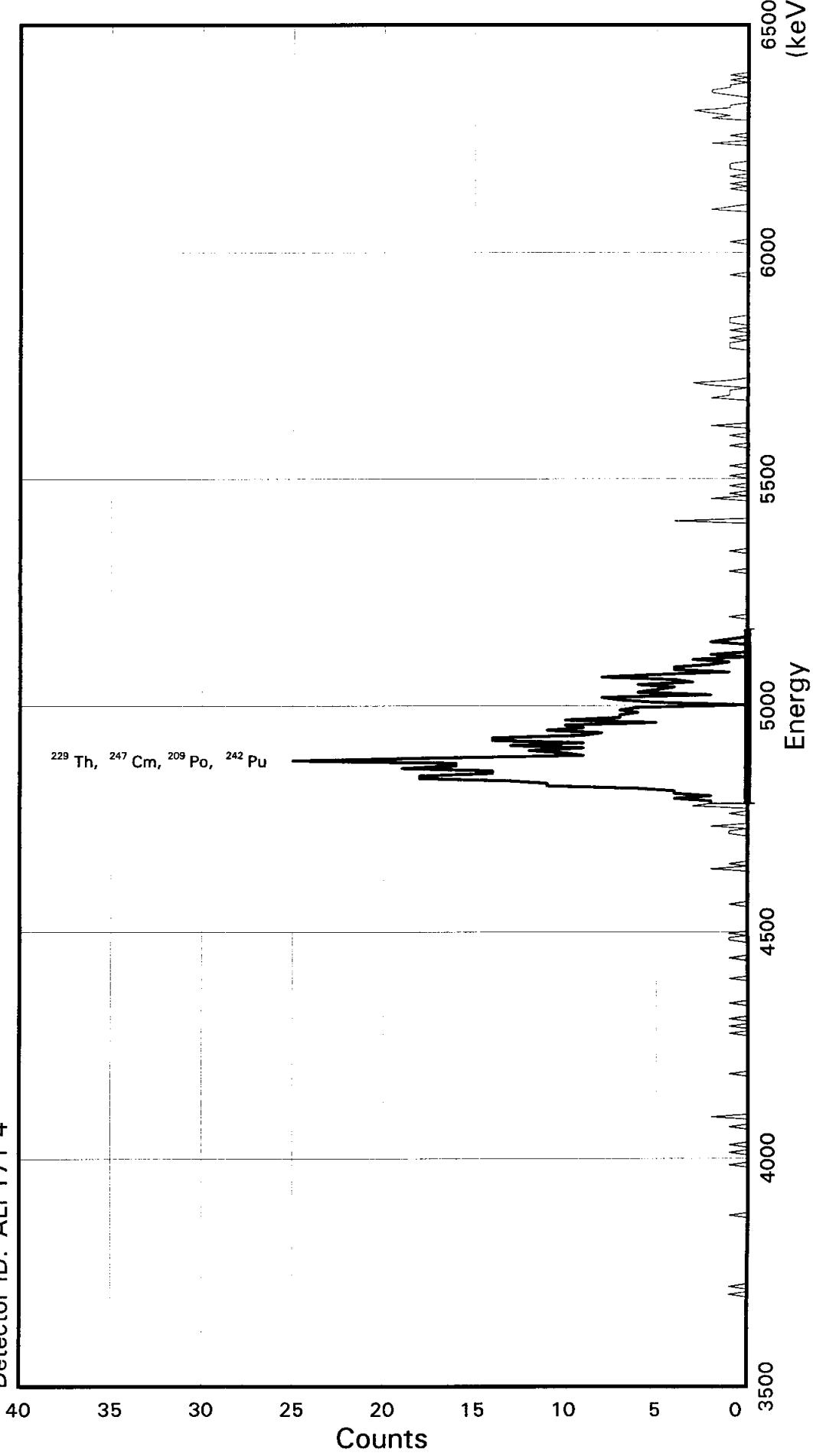
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	8	1	0.015	5423.2	138.8	306	331
TH-229	489	3	0.976	4845.3	399.8	202	274
TH-230	3	0	0.006	4687.7	111.1	174	194
TH-232	3	0	0.006	4013.0	111.1	53	73

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKAG71AA
Detector ID: ALP171 4

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.63541E + 03
Slope: 5.55677E + 00
Quadrature: -9.33907E-06

SAMPLE IDENTIITY: JKAG71AA

TITLE : TH BRC

DETECTOR : ALP171 4
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKAG71AA_121260827D.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:00:51

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3635.41 keV CONSTANT FWHM : 11.00000 Channels
SLOPE : 5.55677 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.933907E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JKAG71AA

Detector: ALP171 4

Report Date: 12-Dec-06 04:48 PM

Flags Key

Acquire Date: 12-DEC-2006 08:27:16.19

Tracer Nuclide: TH-229

P: Peak Identified

High Counts Limit: 36

I: Peak Intersect

Sample Live Time: 499 minutes

S: Single Non-peak Intersect

Bkgrnd Live Time: 999 minutes

M: Multiple Non-peak Intersect

H: High Non-peak Sample Count

A: Altered via ALP-RGN-EDIT

Nuclide	Smpl	Bkg	Intrsct	Count	Rate	Centrd	Region	Left	Rght	Left	Rght	Wdth	Wdth	Flags
Name	Count	Count	Count		C/Min	Energy	Width	Chnl	Chnl	Mult	Mult			
						keV	keV							
PO-208	-9999	-9999	0	-10.010	5149.0	383.0	256	325	0.00	0.00				M I
PO-209	488	3	0	0.974	4917.3	383.1	207	276	0.00	0.00				P
PO-210	-9999	-9999	0	-10.010	5338.5	383.0	290	359	0.00	0.00				M
AC-227	-9999	-9999	0	-10.010	6072.1	382.8	422	491	0.00	0.00				M
TH-227	-9999	-9999	0	-10.010	6072.1	382.8	422	491	0.00	0.00				M
TH-228	-9999	-9999	0	-10.010	5457.3	383.0	311	380	0.00	0.00				M
TH-229	488	3	0	0.974	4879.4	383.1	207	276	0.00	0.00				P
TH-230	-9999	-9999	0	-10.010	4721.8	383.1	179	248	0.00	0.00				M I
TH-232	8	0	4	0.016	4047.1	383.3	57	126	0.00	0.00				S
U-232	-9999	-9999	0	-10.010	5354.3	383.0	293	362	0.00	0.00				M
U-234	-9999	-9999	0	-10.010	4808.7	383.1	194	263	0.00	0.00				M I
U-235	-9999	-9999	0	-10.010	4431.9	383.2	126	195	0.00	0.00				M
PU-236	-9999	-9999	0	-10.010	5801.8	382.9	373	442	0.00	0.00				M
NP-237	-9999	-9999	0	-10.010	4822.1	383.1	197	266	0.00	0.00				M I
PU-238	-9999	-9999	0	-10.010	5533.1	383.0	325	394	0.00	0.00				M
U-238	-9999	-9999	0	-10.010	4232.1	383.3	90	159	0.00	0.00				M
PU-239	-9999	-9999	0	-10.010	5190.7	383.0	263	332	0.00	0.00				M I
AM-241	-9999	-9999	0	-10.010	5519.7	383.0	322	391	0.00	0.00				M
AM-242M	-9999	-9999	0	-10.010	5240.9	383.0	272	341	0.00	0.00				M I
CM-242	-9999	-9999	0	-10.010	6146.8	382.8	435	504	0.00	0.00				M
PU-242	488	3	0	0.974	4934.6	383.1	207	276	0.00	0.00				P
AM-243	-9999	-9999	0	-10.010	5309.4	383.0	284	353	0.00	0.00				M
CM-244	-9999	-9999	0	-10.010	5838.9	382.9	380	449	0.00	0.00				M
CM-246	-9999	-9999	0	-10.010	5420.6	388.5	304	374	0.00	0.00				M
CM-247	488	3	0	0.974	4904.5	383.1	207	276	0.00	0.00				P
CM-248	-9999	-9999	0	-10.010	5112.7	383.1	249	318	0.00	0.00				M I

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JKAG71AA

Flags Key

Detector: ALP171 4

Intersect Region: @

Report Date: 12-Dec-06 04:48 PM

Non-Intersect Region: +, -

Acquire Date: 12-DEC-2006 08:27:16.19

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
	1	0	51	0@	101	0@	151	0@	201	6@	251	0@	301	0@	351	0@	401	1@	451	0-	501					
	2	0	52	0@	102	1@	152	0@	202	5@	252	0@	302	0@	352	0@	402	0@	452	0-	502					
0	3	0	53	0@	103	1@	153	1@	203	4@	253	0@	303	1@	353	0@	403	1@	453	0-	503					
0	4	0	54	0@	104	0@	154	0@	204	6@	254	0@	304	0@	354	0@	404	0@	454	0-	504					
0	5	0	55	0@	105	1@	155	0@	205	3@	255	0@	305	0@	355	0@	405	0@	455	0	505					
0	6	0	56	0@	106	0@	156	3@	206	4@	256	0@	306	0@	356	0@	406	1@	456	0	506					
0	7	0+	57	0@	107	0@	157	2@	207	8@	257	1@	307	2@	357	0@	407	0@	457	0	507					
0	8	0+	58	0@	108	0@	158	2@	208	5@	258	0@	308	0@	358	0@	408	0@	458	0	508					
0	9	0+	59	0@	109	0@	159	4@	209	1@	259	0@	309	0@	359	0@	409	1@	459	0	509					
0	10	0+	60	0@	110	0+	160	2@	210	4@	260	0@	310	0@	360	0@	410	1@	460	0	510					
0	11	0+	61	0@	111	0+	161	4@	211	4@	261	0@	311	0@	361	0@	411	1@	461	0	511					
1	12	0+	62	0@	112	0+	162	4@	212	2@	262	0@	312	0@	362	0@	412	0@	462	0	512					
0	13	1+	63	0@	113	0+	163	6@	213	1@	263	0@	313	0@	363	0@	413	0@	463							
0	14	0+	64	0@	114	0+	164	11@	214	3@	264	0@	314	0@	364	0@	414	0@	464							
1	15	0+	65	1@	115	0+	165	11@	215	0@	265	0@	315	0@	365	0@	415	0@	465							
0	16	0+	66	0@	116	0+	166	13@	216	2@	266	0@	316	0@	366	0@	416	0@	466							
0	17	0+	67	0@	117	1+	167	18@	217	0@	267	0@	317	0@	367	1@	417	0@	467							
0	18	1+	68	1@	118	0+	168	18@	218	0@	268	0@	318	2@	368	0@	418	0@	468							
0	19	0+	69	0@	119	0+	169	14@	219	0@	269	4@	319	1@	369	0@	419	2@	469							
0	20	0+	70	0@	120	0+	170	14@	220	0@	270	0@	320	1@	370	0@	420	0@	470							
0	21	1+	71	1@	121	0+	171	19@	221	2@	271	0@	321	1@	371	0@	421	0@	471							
0	22	0+	72	0@	122	0+	172	16@	222	1@	272	0@	322	0@	372	0@	422	1@	472							
0	23	0+	73	0@	123	0+	173	16@	223	0@	273	0@	323	2@	373	0@	423	0@	473							
0	24	0+	74	0@	124	0+	174	25@	224	0@	274	0@	324	3@	374	0@	424	0@	474							
0	25	0+	75	0@	125	0+	175	18@	225	0@	275	0@	325	1@	375	0@	425	0@	475							
0	26	0+	76	0@	126	0+	176	9@	226	0@	276	0@	326	0@	376	0@	426	0@	476							
0	27	0+	77	1@	127	0+	177	10@	227	0@	277	0@	327	0@	377	0@	427	0@	477							
0	28	1+	78	0@	128	0+	178	12@	228	0@	278	2@	328	0@	378	0@	428	0@	478							
0	29	0+	79	0@	129	0@	179	9@	229	0@	279	0@	329	0@	379	0@	429	2@	479							
0	30	0+	80	0@	130	0@	180	13@	230	0@	280	1@	330	0-	380	1@	430	1@	480							
0	31	0+	81	0@	131	2@	181	9@	231	1@	281	0@	331	0@	381	0@	431	2@	481							
0	32	2+	82	0@	132	0@	182	14@	232	0@	282	0@	332	0@	382	0@	432	3@	482							
0	33	0+	83	0@	133	1@	183	14@	233	0@	283	1@	333	0@	383	0@	433	1@	483							
0	34	0+	84	0@	134	0@	184	9@	234	0@	284	0@	334	0@	384	0@	434	1@	484							
0	35	0+	85	0@	135	0@	185	8@	235	0@	285	0@	335	0@	385	0@	435	0@	485							
0	36	0+	86	0@	136	0@	186	11@	236	0@	286	0@	336	0@	386	0@	436	0@	486							
0	37	0+	87	1@	137	0@	187	9@	237	0@	287	1@	337	0@	387	0@	437	0@	487							
0	38	0+	88	0@	138	0@	188	10@	238	0@	288	0@	338	1@	388	0@	438	1@	488							
0	39	0+	89	0@	139	0@	189	5@	239	0@	289	0@	339	1@	389	0@	439	2@	489							
0	40	0@	90	0@	140	0@	190	10@	240	0@	290	0@	340	1@	390	0@	440	2@	490							
0	41	0@	91	0@	141	0@	191	7@	241	0@	291	1@	341	0@	391	0@	441	1@	491							
0	42	0@	92	0@	142	0@	192	7@	242	0@	292	0@	342	1@	392	0@	442	1-	492							
1	43	0@	93	0@	143	0@	193	6@	243	0@	293	0@	343	0@	393	2@	443	0-	493							
0	44	0@	94	0@	144	0@	194	7@	244	0@	294	0@	344	0@	394	1@	444	1-	494							
0	45	0@	95	1@	145	1@	195	6@	245	0@	295	0@	345	1@	395	0@	445	0-	495							
0	46	0@	96	0@	146	1@	196	0@	246	0@	296	0@	346	0@	396	0@	446	1-	496							
0	47	0@	97	0@	147	0-	197	5@	247	0@	297	0@	347	0@	397	0@	447	0-	497							
0	48	0@	98	0@	148	2@	198	7@	248	0@	298	0@	348	1@	398	0@	448	0-	498							
0	49	1@	99	0@	149	0@	199	8-	249	1@	299	1@	349	1@	399	0@	449	0-	499							
0	50	0@	100	0@	150	0@	200	2@	250	0@	300	0@	350	1@	400	0@	450	0-	500							

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:10

Configuration : \$DISK1:[ALP171.SAMPLE]JKAG71AA_121260827D.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID : JKAG71AA Sample quantity : 0.00000E+00 LITER
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3652.08 keV End energy : 6478.02 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4879.40	488		0122.25	223.95	207	69	1.63E-02	4.5	

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:48:12

Configuration : \$DISK1:[ALP171.SAMPLE]JKAG71AA_121260827D.CNF;1
 Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
 Sample title : TH BRC
 Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
 Sample ID : JKAG71AA Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Energy tolerance : 80.00 keV Half life ratio : 1.00
 Errors propagated: No Systematic Error : 0.00 %
 Efficiency type : Spline Efficiencies at : Peak Energy
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	1
Number of unidentified lines	0
Number of lines tentatively identified by NID	1 100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma	%Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00		0.00	
<hr/>								
Total Activity :			0.000E+00	0.000E+00				

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma	%Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00		0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00		0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00		0.00	
<hr/>								
Total Activity :			0.000E+00	0.000E+00				
Grand Total Activity :			0.000E+00	0.000E+00				

Flags: "K" = Keyline not found
 "E" = Manually edited

"M" = Manually accepted
 "A" = Nuclide specific abn. limit

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP171.SAMPLE]JKAG71AA_121260827D.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4879.39	207	276	488	485	0.14		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAHM1AA

Detector: ALP171 5

Report Date: 12-Dec-06 06:53 PM

Acquire Date: 12-DEC-2006 08:27:16.19

Tracer Nuclide: TH-229

Sample Live Time: 499 minutes

Bkgrnd Live Time: 999 minutes

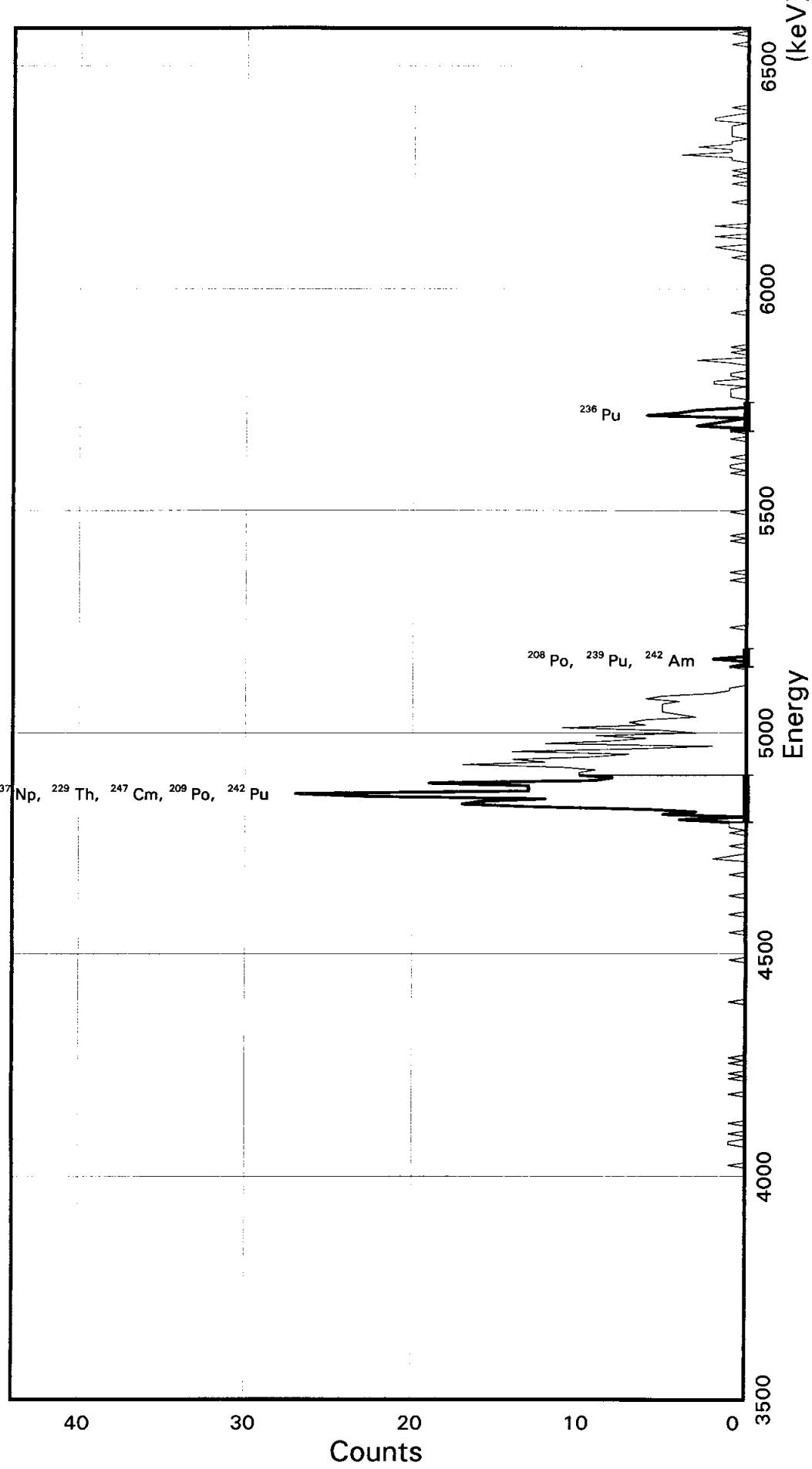
Nuclide	Smpl Count	Bkg Count	Count	Centrd Rate C/Min	Region Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	4	2	0.006	5423.2	118.2	301	321	
TH-229	446	3	0.890	4845.3	354.5	203	263	
TH-230	5	2	0.008	4687.7	135.9	176	199	
TH-232	1	0	0.002	4013.0	118.1	62	82	

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKAHM1AA
Detector ID: ALP171 5

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.55921E+03
Slope: 5.90028E+00
Quadrature: 1.85461E-05

SAMPLE IDENTIITY: JKAHM1AA

TITLE : TH BRC

DETECTOR : ALP171 5
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKAHM1AA_121260827E.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:01:04

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3559.21 keV CONSTANT FWHM : 8.00000 Channels
SLOPE : 5.90028 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 1.854610E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JKAHM1AA

	Flags Key
Detector: ALP171 5	
Report Date: 12-Dec-06 04:48 PM	P: Peak Identified
Acquire Date: 12-DEC-2006 08:27:16.19	I: Peak Intersect
Tracer Nuclide: TH-229	S: Single Non-peak Intersect
High Counts Limit: 36	M: Multiple Non-peak Intersect
Sample Live Time: 499 minutes	H: High Non-peak Sample Count
Bkgrnd Live Time: 999 minutes	A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count C/Min	Centrd Energy keV	Region Width keV	Left Rght		Flags
							Left Chnl	Rght Chnl	
PO-208	4	1	0	0.007	5132.9	41.4	269	276	0.00 0.00 P
PO-209	214	1	0	0.427	4901.2	106.4	210	228	0.00 0.00 P
PO-210	-9999	-9999	0	-10.010	5322.4	106.4	288	306	0.00 0.00 M
AC-227	2	4	4	0.001	6056.0	106.5	412	430	0.00 0.00 S
TH-227	2	4	4	0.001	6056.0	106.5	412	430	0.00 0.00 S
TH-228	-9999	-9999	0	-10.010	5441.2	106.4	308	326	0.00 0.00 M
TH-229	214	1	0	0.427	4863.3	106.4	210	228	0.00 0.00 P
TH-230	5	2	1	0.007	4705.7	106.3	183	201	0.00 0.00 S
TH-232	2	0	0	0.004	4031.0	106.3	69	87	0.00 0.00
U-232	-9999	-9999	0	-10.010	5338.2	106.4	290	308	0.00 0.00 M
U-234	-9999	-9999	0	-10.010	4792.6	106.3	198	216	0.00 0.00 S I
U-235	1	0	0	0.002	4415.8	106.3	134	152	0.00 0.00
PU-236	20	0	0	0.040	5785.6	65.1	359	370	0.00 0.00 P
NP-237	214	1	0	0.427	4806.0	106.4	210	228	0.00 0.00 P
PU-238	-9999	-9999	0	-10.010	5517.0	106.4	321	339	0.00 0.00 M
U-238	4	0	0	0.008	4216.0	106.3	100	118	0.00 0.00
PU-239	4	1	0	0.007	5174.6	41.4	269	276	0.00 0.00 P
AM-241	-9999	-9999	0	-10.010	5503.6	106.4	318	336	0.00 0.00 M
AM-242M	4	1	0	0.007	5224.8	41.4	269	276	0.00 0.00 P
CM-242	-9999	-9999	0	-10.010	6130.7	106.5	424	442	0.00 0.00 M
PU-242	214	1	0	0.427	4918.5	106.4	210	228	0.00 0.00 P
AM-243	-9999	-9999	0	-10.010	5293.3	106.4	283	301	0.00 0.00 M
CM-244	15	17	0	0.013	5822.8	106.5	372	390	0.00 0.00
CM-246	-9999	-9999	0	-10.010	5404.5	106.4	302	320	0.00 0.00 M
CM-247	214	1	0	0.427	4888.4	106.4	210	228	0.00 0.00 P
CM-248	52	2	0	0.102	5096.6	106.4	249	267	0.00 0.00 H

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JKAHM1AA

Flags Key

Detector: ALP171 5

Report Date: 12-Dec-06 04:48 PM

Intersect Region: @

Acquire Date: 12-DEC-2006 08:27:16.19

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
1	0	51	0+	101	0+	151	1@	201	4+	251	0@	301	0	351	0	401	0	451	0	501						
2	0	52	0+	102	0+	152	0-	202	5+	252	1+	302	0	352	0	402	0	452	0	502						
0	3	0	53	0+	103	0	153	0-	203	5+	253	0@	303	0	353	0	403	1	453	0	503					
0	4	0	54	0+	104	0	154	0-	204	5+	254	0@	304	0	354	1	404	0	454	0	504					
0	5	0	55	0+	105	0	155	0-	205	5+	255	1@	305	0	355	0	405	0	455	0	505					
0	6	0	56	1+	106	0	156	1-	206	4+	256	0@	306	1	356	0	406	1	456	1	506					
0	7	0	57	0+	107	1	157	0-	207	6+	257	0@	307	0	357	0	407	0	457	0	507					
0	8	0	58	0+	108	0	158	1-	208	5+	258	0@	308	0	358	0	408	1	458	0	508					
0	9	0	59	0+	109	0	159	1-	209	2+	259	0@	309	1+	359	0	409	0	459	0	509					
0	10	0	60	0+	110	0	160	1-	210	1+	260	0@	310	0+	360	0	410	0	460	1	510					
0	11	0	61	0+	111	0	161	4@	211	1+	261	0@	311	3+	361	0	411	0	461	0	511					
0	12	0	62	1+	112	0	162	0@	212	0+	262	0@	312	2+	362	0@	412	1	462	0	512					
0	13	0	63	0+	113	0	163	5@	213	0+	263	0@	313	1+	363	0@	413	1	463							
0	14	0	64	1+	114	0	164	3@	214	0+	264	0@	314	0+	364	0@	414	4	464							
0	15	0	65	0+	115	0	165	6@	215	0+	265	0@	315	6+	365	0@	415	1	465							
0	16	0	66	0+	116	0	166	13@	216	0+	266	0@	316	4+	366	0@	416	1	466							
0	17	0	67	0+	117	0	167	17@	217	0+	267	1@	317	3+	367	0@	417	3	467							
0	18	0	68	1+	118	1	168	16@	218	0	268	0@	318	0+	368	0@	418	1	468							
0	19	0+	69	0	119	0	169	12@	219	1+	269	1@	319	0+	369	0@	419	1	469							
0	20	0+	70	1	120	0	170	23@	220	0@	270	0@	320	0	370	0@	420	0	470							
0	21	0+	71	0	121	0	171	27@	221	0@	271	0@	321	0	371	0@	421	1	471							
0	22	0+	72	0	122	0	172	13@	222	2@	272	0@	322	1+	372	0@	422	1	472							
0	23	0+	73	0	123	0	173	13@	223	0@	273	0@	323	1+	373	0@	423	1	473							
0	24	0+	74	0	124	0	174	13@	224	0@	274	0@	324	1+	374	0-	424	1	474							
0	25	0+	75	0	125	1	175	19@	225	0@	275	0@	325	1+	375	1@	425	1	475							
0	26	0+	76	0	126	0	176	9@	226	0	276	0@	326	0+	376	0@	426	0	476							
0	27	0+	77	0	127	0	177	8@	227	0	277	0@	327	2+	377	0@	427	2	477							
0	28	0+	78	0	128	0	178	10	228	0	278	1@	328	2+	378	1@	428	2	478							
0	29	1+	79	0	129	0	179	10	229	0	279	0@	329	0+	379	2@	429	1	479							
0	30	0+	80	0	130	0	180	9	230	0	280	0@	330	1+	380	0@	430	0	480							
0	31	0+	81	0	131	0	181	11	231	0	281	0@	331	1+	381	0-	431	0	481							
0	32	0+	82	0	132	1	182	17	232	0	282	0@	332	0+	382	0-	432	1	482							
0	33	0+	83	0	133	0+	183	12	233	0+	283	0@	333	0+	383	2-	433	0	483							
0	34	0+	84	0+	134	0+	184	14	234	1+	284	0@	334	0+	384	0-	434	0	484							
0	35	0+	85	0+	135	0+	185	9	235	0+	285	0@	335	1+	385	0-	435	0	485							
0	36	0+	86	0+	136	0+	186	7	236	0+	286	0@	336	3+	386	0-	436	0	486							
0	37	1+	87	0+	137	0+	187	14	237	0+	287	0+	337	0+	387	2-	437	0	487							
0	38	1	88	0+	138	0+	188	7	238	0@	288	0+	338	0+	388	0-	438	0	488							
0	39	0	89	0+	139	0+	189	2	239	0@	289	0+	339	1+	389	0-	439	0	489							
0	40	0	90	0+	140	1+	190	12	240	0@	290	0	340	0+	390	0-	440	0	490							
0	41	1	91	1+	141	0+	191	8	241	0@	291	0	341	1	391	0-	441	0	491							
0	42	0	92	0+	142	0+	192	6	242	0@	292	0	342	0	392	0-	442	0	492							
0	43	0	93	0+	143	0+	193	9	243	0@	293	1	343	0	393	0	443	0	493							
0	44	0	94	0+	144	0+	194	3	244	0@	294	0	344	0	394	0	444	0	494							
0	45	1	95	0+	145	0+	195	5	245	0@	295	1	345	0	395	0	445	0	495							
0	46	0	96	0+	146	2+	196	11	246	0@	296	1	346	0	396	1	446	0	496							
0	47	0	97	0+	147	1+	197	6	247	0@	297	0	347	0	397	0	447	0	497							
0	48	0	98	0+	148	0@	198	7	248	0@	298	0	348	0	398	0	448	0	498							
0	49	0	99	0+	149	0@	199	6+	249	0@	299	1	349	0	399	0	449	0	499							
0	50	0+	100	0+	150	0@	200	3+	250	0@	300	0	350	0	400	0	450	0	500							

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:15

Configuration : \$DISK1:[ALP171.SAMPLE]JKAHM1AA_121260827E.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID : JKAHM1AA Sample quantity : 0.00000E+00 LITER
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3576.91 keV End energy : 6585.01 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4863.29	214	0	64.90	220.87	210	18	7.14E-03	6.8	
2	0	5162.50		4	0	23.60	271.50	269	7	1.33E-04	50.0
3	0	5716.86		20	0	29.50	365.27	359	11	6.67E-04	22.4

Configuration : \$DISK1:[ALP171.SAMPLE]JKAHM1AA_121260827E.CNF;1
 Analyses by : ALPHA V1.8, PEAKEFF V2.2, NID V3.3
 Sample title : TH BRC
 Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
 Sample ID : JKAHM1AA Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Energy tolerance : 80.00 keV Half life ratio : 1.00
 Errors propagated: No Systematic Error : 0.00 %
 Efficiency type : Spline Efficiencies at : Peak Energy
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	3
Number of unidentified lines	0
Number of lines tentatively identified by NID	3 100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma	%Error	Flags
PO-208	2.90Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00		
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
			-----	-----	-----			
			Total Activity :	0.000E+00	0.000E+00			

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma	%Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00		
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
PU-239	24110.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
AM-242M	141.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
			-----	-----	-----			
			Total Activity :	0.000E+00	0.000E+00			
			Grand Total Activity :	0.000E+00	0.000E+00			

Flags: "K" = Keyline not found
"E" = Manually edited"M" = Manually accepted
"A" = Nuclide specific abn. limit

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP171.SAMPLE]JKAHM1AA_121260827E.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4863.28	210	228	214	212	0.14		
5162.50	269	276	4	3	0.50		
5716.85	359	370	20	20	0.00		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAHR1AA

Detector: ALP171 6

Report Date: 12-Dec-06 06:54 PM

Acquire Date: 12-DEC-2006 08:27:16.19

Tracer Nuclide: TH-229

Sample Live Time: 499 minutes

Bkgrnd Live Time: 999 minutes

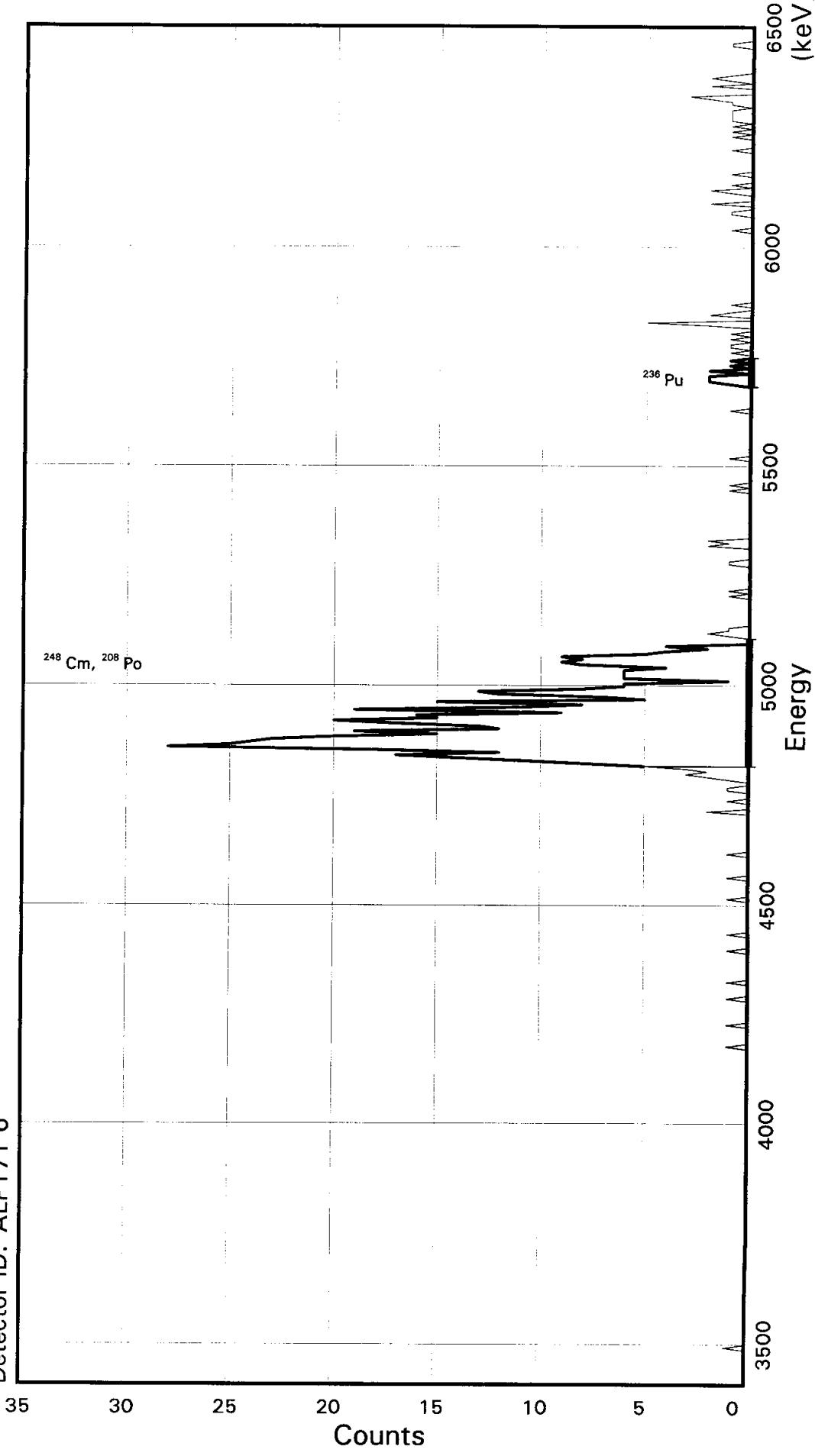
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd	Region		
			Rate C/Min	Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	7	1	0.013	5423.2	157.3	318	344
TH-229	547	1	1.094	4845.3	387.1	226	290
TH-230	3	2	0.004	4687.7	120.9	200	220
TH-232	0	0	0.000	4013.0	120.9	88	108

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKAAHR1AA
Detector ID: ALP171 6

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.39009E+03
Slope: 6.04275E+00
Quadrature: 9.81818E-06

SAMPLE IDENTIITY: JKAHR1AA

TITLE : TH BRC

DETECTOR : ALP171 6
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKAHR1AA_121260827F.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:01:17

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3390.09 keV CONSTANT FWHM : 8.00000 Channels
SLOPE : 6.04275 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 9.818180E-06 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing
 for Spectra Not Processed by Alp_rgn_cnts
 (Version: 29-Jun-92)

Sample Identity: JKAHR1AA

Flags Key

Detector: ALP171 6

Report Date: 12-Dec-06 04:48 PM

Intersect Region: @

Acquire Date: 12-DEC-2006 08:27:16.19

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
	1	0	51	0	101	0	151	0	201	13	251	0	301	0	351	0	401	0	451	0	501					
	2	0	52	0	102	0	152	0	202	17	252	1	302	1	352	2	402	1	452	0	502					
0	3	0	53	0	103	0	153	1	203	20	253	0	303	0	353	5	403	2	453	0	503					
0	4	0	54	0	104	1	154	0	204	15	254	0	304	0	354	0	404	0	454	0	504					
0	5	0	55	0	105	0	155	0	205	16	255	0	305	0	355	0	405	1	455	0	505					
0	6	0	56	0	106	0	156	0	206	9	256	0	306	0	356	2	406	0	456	0	506					
0	7	0	57	0	107	0	157	0	207	19	257	0	307	0	357	1	407	0	457	1	507					
0	8	0	58	0	108	0	158	0	208	11	258	0	308	0	358	0	408	0	458	1	508					
0	9	0	59	0	109	0	159	0	209	8	259	0	309	0	359	0	409	1	459	0	509					
0	10	0	60	0	110	0	160	0	210	15	260	0	310	0	360	1	410	0	460	0	510					
0	11	0	61	0	111	0	161	0	211	5	261	0	311	0	361	0	411	0	461	0	511					
0	12	0	62	0	112	0	162	0	212	7	262	1	312	0	362	0	412	0	462	0	512					
0	13	0	63	0	113	0	163	0	213	12	263	1	313	0	363	0	413	0	463							
0	14	0	64	0	114	0	164	0	214	13	264	0	314	0	364	0	414	0	464							
0	15	0	65	0	115	0	165	0	215	8	265	0	315	0	365	0	415	0	465							
0	16	0	66	0	116	1	166	0	216	6	266	0	316	0	366	0	416	0	466							
1	17	0	67	0	117	0	167	0	217	6	267	0	317	0	367	0	417	0	467							
0	18	0	68	0	118	0	168	0	218	1	268	0	318	0	368	0	418	1	468							
0	19	0	69	0	119	0	169	2	219	6	269	2	319	0	369	0	419	0	469							
0	20	0	70	0	120	0	170	0	220	6	270	1	320	1	370	0	420	0	470							
0	21	0	71	0	121	0	171	0	221	6	271	2	321	0	371	0	421	0	471							
0	22	0	72	0	122	1	172	0	222	6	272	0	322	0	372	0	422	0	472							
0	23	0	73	0	123	0	173	1	223	4	273	0	323	0	373	0	423	1	473							
0	24	0	74	0	124	0	174	0	224	8	274	0	324	0	374	0	424	0	474							
0	25	0	75	0	125	0	175	0	225	9	275	0	325	0	375	0	425	1	475							
0	26	0	76	0	126	0	176	0	226	8	276	0	326	0	376	0	426	0	476							
0	27	0	77	0	127	0	177	1	227	9	277	0	327	0	377	0	427	1	477							
0	28	0	78	0	128	0	178	1	228	5	278	0	328	0	378	0	428	0	478							
0	29	0	79	0	129	0	179	0	229	4	279	0	329	0	379	0	429	1	479							
0	30	0	80	1	130	0	180	0	230	2	280	0	330	1	380	0	430	1	480							
0	31	0	81	0	131	0	181	1	231	4	281	0	331	2	381	0	431	1	481							
0	32	0	82	0	132	0	182	2	232	0	282	0	332	2	382	0	432	1	482							
0	33	0	83	0	133	0	183	3	233	0	283	0	333	2	383	0	433	1	483							
0	34	0	84	0	134	0	184	2	234	0	284	0	334	0	384	0	434	0	484							
0	35	0	85	0	135	0	185	3	235	1	285	0	335	2	385	0	435	1	485							
0	36	0	86	0	136	1	186	5	236	2	286	0	336	0	386	0	436	1	486							
0	37	0	87	0	137	0	187	8	237	1	287	0	337	1	387	0	437	2	487							
0	38	0	88	1	138	0	188	11	238	1	288	0	338	0	388	1	438	3	488							
0	39	0	89	0	139	0	189	14	239	0	289	0	339	1	389	0	439	0	489							
0	40	0	90	0	140	0	190	17	240	0	290	1	340	0	390	0	440	0	490							
0	41	0	91	0	141	0	191	12	241	0	291	0	341	0	391	0	441	0	491							
0	42	0	92	0	142	0	192	18	242	0	292	1	342	1	392	0	442	2	492							
0	43	0	93	0	143	0	193	28	243	0	293	0	343	0	393	0	443	0	493							
0	44	0	94	0	144	1	194	25	244	0	294	0	344	1	394	1	444	1	494							
0	45	0	95	0	145	0	195	24	245	0	295	0	345	1	395	1	445	2	495							
0	46	0	96	0	146	0	196	23	246	0	296	0	346	0	396	0	446	1	496							
0	47	0	97	0	147	0	197	20	247	0	297	0	347	1	397	0	447	0	497							
0	48	0	98	1	148	0	198	15	248	0	298	0	348	0	398	2	448	0	498							
0	49	0	99	0	149	0	199	19	249	0	299	0	349	1	399	0	449	0	499							

0 50 0 100 0 150 0 200 12 250 1 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:20

Configuration : \$DISK1:[ALP171.SAMPLE]JKAHR1AA_121260827F.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID : JKAHR1AA Sample quantity : 0.00000E+00 LITER
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3408.22 keV End energy : 6486.55 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	5046.07	530	0	60.43	273.92	236	48	1.77E-02	4.3	
2	0	5698.12	11	0	24.17	381.71	379	11	3.67E-04	30.2	

VMS Nuclide Identification Report V3.0 Generated 12-DEC-2006 16:48:22

Configuration : \$DISK1:[ALP171.SAMPLE]JKAHR1AA_121260827F.CNF;1
 Analyses by : ALPHA V1.8, PEAKEFF V2.2, NID V3.3
 Sample title : TH BRC
 Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
 Sample ID : JKAHR1AA Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Energy tolerance : 80.00 keV Half life ratio : 1.00
 Errors propagated: No Systematic Error : 0.00 %
 Efficiency type : Spline Efficiencies at : Peak Energy
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	2
Number of unidentified lines	0
Number of lines tentatively identified by NID	2 100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma	%Error	Flags
PO-208	2.90Y	1.03	0.000E+00	0.000E+00	0.000E+00		0.00	
<hr/>								
Total Activity :			0.000E+00	0.000E+00				

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma	%Error	Flags
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00		0.00	
CM-248	3.39E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00		0.00	
<hr/>								
Total Activity :			0.000E+00	0.000E+00				

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found "M" = Manually accepted
 "E" = Manually edited "A" = Nuclide specific abn. limit

Error Report (Date: 12-Dec-06 04:48 PM)

Program: Alp_rgn_cnts

subroutine: Main

Message: No trace pk or nucl

Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAHT1AA

Detector: ALP171 7
Report Date: 12-Dec-06 06:55 PM
Acquire Date: 12-DEC-2006 08:27:16.19
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

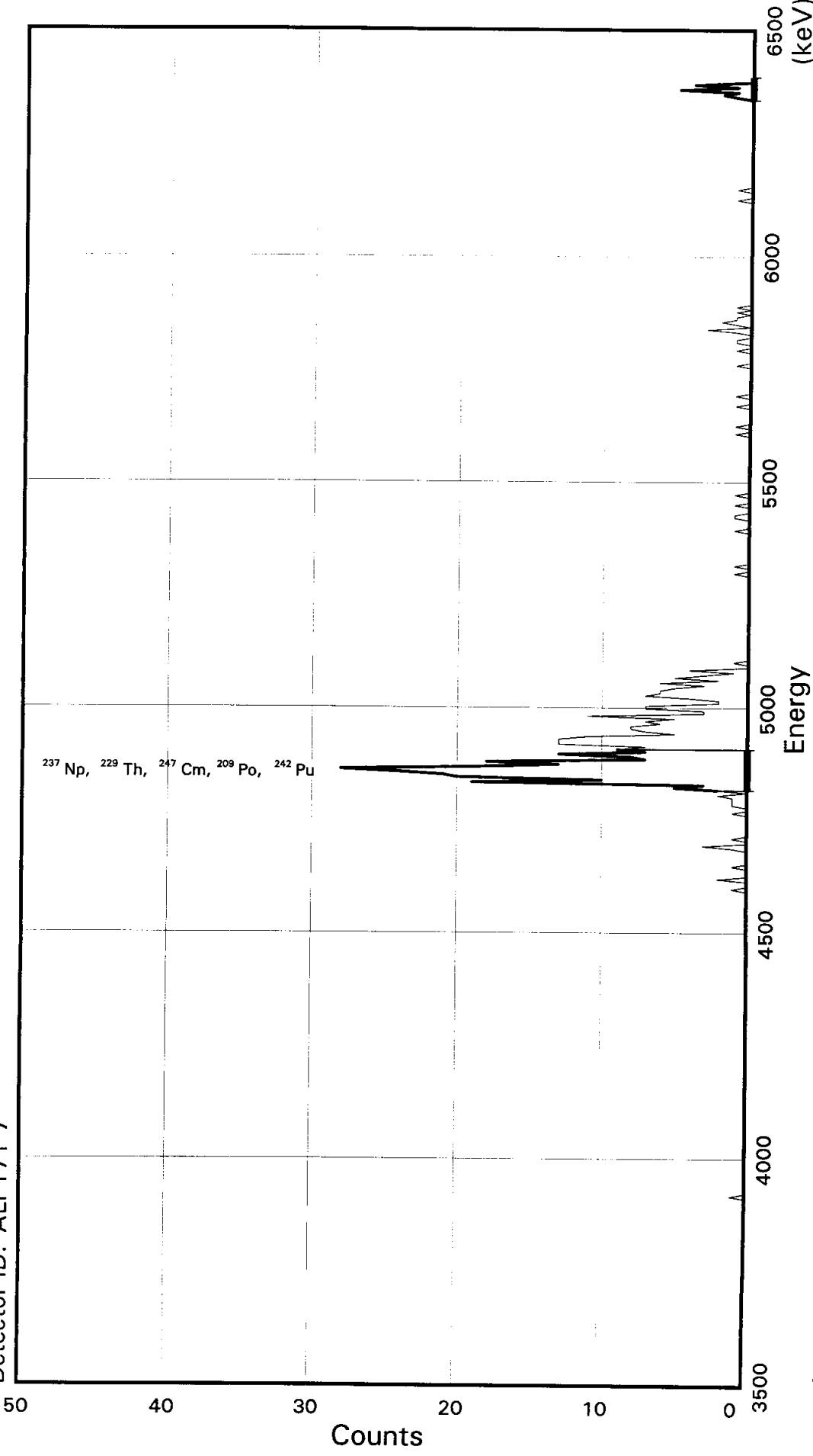
Nuclide	Smpl Count	Bkg Count	Count	Centrd Rate C/Min	Region Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	4	0	0.008	5423.2	123.9	310	332	
TH-229	424	1	0.848	4845.3	349.3	208	270	
TH-230	9	0	0.018	4687.7	124.0	178	200	
TH-232	1	0	0.002	4013.0	129.6	57	80	

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKAHT1AA
Detector ID: ALP171 7

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.59010E + 03
Slope: 5.63675E + 00
Quadrature: -6.58914E-06

SAMPLE IDENTIITY: JKAHT1AA

TITLE : TH BRC

DETECTOR : ALP171 7
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKAHT1AA_121260827G.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:01:34

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3590.10 keV CONSTANT FWHM : 6.50000 Channels
SLOPE : 5.63675 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.658914E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JKAHT1AA

Detector: ALP171 7	Flags Key
Report Date: 12-Dec-06 04:48 PM	P: Peak Identified
Acquire Date: 12-DEC-2006 08:27:16.19	I: Peak Intersect
Tracer Nuclide: TH-229	S: Single Non-peak Intersect
High Counts Limit: 36	M: Multiple Non-peak Intersect
Sample Live Time: 499 minutes	H: High Non-peak Sample Count
Bkgrnd Live Time: 999 minutes	A: Altered via ALP-RGN-EDIT

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count Rate C/Min	Centrd Energy keV	Region Width keV	Left Chnl	Rght Chnl	Left Mult	Rght Mult	Wdth Wdth	Flags
PO-208	-9999	-9999	0	-10.010	5128.1	90.1	266	282	0.00	0.00		M
PO-209	240	0	0	0.481	4896.4	90.1	218	234	0.00	0.00		P
PO-210	-9999	-9999	0	-10.010	5317.6	90.1	299	315	0.00	0.00		M
AC-227	0	1	0	-0.001	6051.2	90.1	430	446	0.00	0.00		M
TH-227	0	1	0	-0.001	6051.2	90.1	430	446	0.00	0.00		S
TH-228	-9999	-9999	0	-10.010	5436.4	90.1	321	337	0.00	0.00		S
TH-229	240	0	0	0.481	4858.5	90.1	218	234	0.00	0.00		M
TH-230	5	0	0	0.010	4700.9	90.1	190	206	0.00	0.00		P
TH-232	0	0	0	0.000	4026.2	90.2	70	86	0.00	0.00		S
U-232	-9999	-9999	0	-10.010	5333.4	90.1	302	318	0.00	0.00		M
U-234	-9999	-9999	0	-10.010	4787.8	90.1	205	221	0.00	0.00		S I
U-235	0	0	0	0.000	4411.0	90.2	139	155	0.00	0.00		
PU-236	3	5	4	0.002	5780.9	90.1	382	398	0.00	0.00		S
NP-237	240	0	0	0.481	4801.2	90.1	218	234	0.00	0.00		P
PU-238	-9999	-9999	0	-10.010	5512.2	90.1	334	350	0.00	0.00		M
U-238	0	0	0	0.000	4211.2	90.2	103	119	0.00	0.00		
PU-239	-9999	-9999	0	-10.010	5169.8	90.1	273	289	0.00	0.00		M
AM-241	-9999	-9999	0	-10.010	5498.8	90.1	332	348	0.00	0.00		M
AM-242M	-9999	-9999	0	-10.010	5220.0	90.1	282	298	0.00	0.00		M
CM-242	-9999	-9999	0	-10.010	6125.9	90.1	443	459	0.00	0.00		M
PU-242	240	0	0	0.481	4913.7	90.1	218	234	0.00	0.00		M
AM-243	-9999	-9999	0	-10.010	5288.5	90.1	294	310	0.00	0.00		P
CM-244	10	15	4	0.006	5818.0	90.1	388	404	0.00	0.00		S
CM-246	-9999	-9999	0	-10.010	5399.7	90.1	314	330	0.00	0.00		M
CM-247	240	0	0	0.481	4883.6	90.1	218	234	0.00	0.00		P
CM-248	-9999	-9999	0	-10.010	5091.8	90.1	259	275	0.00	0.00		M

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JKAHT1AA

Flags Key

Detector: ALP171 7

Report Date: 12-Dec-06 04:48 PM

Intersect Region: @

Acquire Date: 12-DEC-2006 08:27:16.19

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	
1	0	51	0	101	0+	151	0+	201	7	251	0@	301	0	351	1-	401	0-	451	0	501							
2	0	52	0	102	0+	152	0+	202	2	252	0@	302	0	352	2-	402	0-	452	0	502							
0	3	0	53	0+	103	0+	153	0+	203	2	253	1@	303	0	353	1-	403	0-	453	0	503						
0	4	0	54	0+	104	0+	154	0+	204	4	254	0@	304	0	354	1-	404	1-	454	0	504						
0	5	0	55	0+	105	0+	155	0@	205	7	255	0@	305	0	355	0	405	0-	455	0	505						
0	6	0	56	0+	106	0	156	0@	206	6	256	1@	306	0	356	1	406	0-	456	0	506						
0	7	0	57	0+	107	0	157	0-	207	6	257	0@	307	0	357	0	407	0-	457	0	507						
0	8	1	58	0+	108	0	158	0-	208	5	258	0@	308	1	358	1	408	0-	458	0	508						
0	9	0	59	0+	109	0	159	1-	209	3+	259	0@	309	0	359	0	409	0-	459	0	509						
0	10	0	60	0+	110	0	160	0-	210	6+	260	0@	310	0	360	0	410	0	460	0	510						
0	11	0	61	0+	111	0	161	0-	211	2+	261	0@	311	1	361	0	411	0	461	0	511						
0	12	0	62	0+	112	0	162	1-	212	5+	262	0@	312	0	362	0	412	0	462	0	512						
0	13	0	63	0+	113	0	163	1-	213	3+	263	0@	313	0	363	0	413	0	463								
0	14	0	64	0+	114	0	164	1-	214	1+	264	0-	314	0	364	0	414	0	464								
0	15	0	65	0+	115	0	165	1-	215	4+	265	0@	315	0	365	0	415	0	465								
0	16	0	66	0+	116	0	166	2-	216	0@	266	0@	316	0	366	0	416	0	466								
0	17	0	67	0+	117	0	167	0-	217	0@	267	0@	317	0	367	0	417	0	467								
0	18	0	68	0+	118	0	168	2-	218	1@	268	0@	318	0	368	0	418	0	468								
0	19	0	69	0+	119	0	169	5@	219	0@	269	0-	319	1	369	0	419	0	469								
0	20	0+	70	0	120	0	170	3@	220	0@	270	1-	320	0	370	0	420	0	470								
0	21	0+	71	0	121	0	171	19@	221	0@	271	0@	321	0	371	0	421	0	471								
0	22	0+	72	0	122	0	172	10@	222	0@	272	0@	322	0	372	0	422	0	472								
0	23	0+	73	0	123	0	173	20@	223	0@	273	0@	323	1	373	0	423	0	473								
0	24	0+	74	0	124	0	174	21@	224	0@	274	0@	324	0	374	0	424	0	474								
0	25	0+	75	0	125	0	175	24@	225	0@	275	1@	325	0	375	0	425	0	475								
0	26	0+	76	0	126	0	176	28@	226	0@	276	1@	326	0	376	0	426	0	476								
0	27	0+	77	0	127	0	177	19@	227	0@	277	0@	327	0	377	0	427	0	477								
0	28	0+	78	0	128	0	178	13@	228	0@	278	0@	328	0	378	0	428	0	478								
0	29	0+	79	0	129	1	179	18@	229	0@	279	0@	329	0	379	0	429	0	479								
0	30	0+	80	0	130	0	180	7@	230	0@	280	1@	330	0	380	0@	430	0	480								
0	31	0+	81	0	131	0	181	8@	231	0@	281	0+	331	0	381	0@	431	0	481								
0	32	0+	82	0	132	0	182	13@	232	0-	282	0@	332	0+	382	0@	432	0	482								
0	33	0+	83	0	133	2	183	7@	233	0@	283	0@	333	0+	383	0@	433	0	483								
0	34	0+	84	0	134	0	184	9	234	0@	284	1@	334	0+	384	0@	434	0	484								
0	35	0+	85	0	135	0	185	7	235	0@	285	0@	335	1+	385	0@	435	0	485								
0	36	0+	86	0	136	0	186	13	236	0@	286	0@	336	0+	386	0@	436	0	486								
0	37	0	87	0	137	0	187	13	237	0@	287	0@	337	0+	387	0@	437	0	487								
0	38	0	88	0	138	1	188	13	238	0@	288	0@	338	0@	388	0@	438	0	488								
0	39	0	89	0+	139	0	189	11	239	0@	289	0@	339	0@	389	0@	439	0	489								
0	40	0	90	0+	140	0+	190	5	240	0-	290	0@	340	0@	390	0@	440	1	490								
0	41	0	91	0+	141	0+	191	7	241	0-	291	0@	341	1@	391	0@	441	2	491								
0	42	0	92	0+	142	0+	192	8	242	0-	292	0@	342	0@	392	0@	442	1	492								
0	43	0	93	0+	143	0+	193	8	243	0-	293	0@	343	0@	393	0-	443	5	493								
0	44	0	94	0+	144	0+	194	6	244	0@	294	0@	344	1@	394	0@	444	1	494								
0	45	0	95	0+	145	1+	195	7	245	0@	295	0@	345	1@	395	0@	445	4	495								
0	46	0	96	0+	146	3+	196	5	246	0@	296	0@	346	0@	396	0@	446	0	496								
0	47	0	97	0+	147	0+	197	11	247	0@	297	0@	347	0@	397	0-	447	0	497								
0	48	0	98	0+	148	0+	198	3	248	0@	298	0@	348	1@	398	0-	448	0	498								
0	49	0	99	0+	149	1+	199	3	249	0@	299	0+	349	3-	399	0-	449	0	499								
0	50	0	100	0+	150	0+	200	7	250	0@	300	0+	350	0-	400	1-	450	0	500								

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:23

Configuration : \$DISK1:[ALP171.SAMPLE]JKAHT1AA_121260827G.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID : JKAHT1AA Sample quantity : 0.00000E+00 LITER
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3607.01 keV End energy : 6474.39 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4858.51	240	0	39.46	225.09	218	16	8.01E-03	6.5	
2	0	6367.88	14	0	28.18	493.08	489	9	4.67E-04	26.7	

Configuration : \$DISK1:[ALP171.SAMPLE]JKAHT1AA_121260827G.CNF;1
 Analyses by : ALPHA V1.8, PEAKEFF V2.2, NID V3.3
 Sample title : TH BRC
 Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
 Sample ID : JKAHT1AA Sample quantity : 0.00000E+00 LITER
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Energy tolerance : 80.00 keV Half life ratio : 1.00
 Errors propagated: No Systematic Error : 0.00 %
 Efficiency type : Spline Efficiencies at : Peak Energy
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	2
Number of unidentified lines	1
Number of lines tentatively identified by NID	1 50.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma	%Error	Flags
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
<hr/>								
Total Activity :			0.000E+00	0.000E+00				

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/LITER	Decay Corr PCI/LITER	Decay Corr 0-Sigma	0-Sigma	%Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
NP-237	2.14E+06Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00		
<hr/>								
Total Activity :			0.000E+00	0.000E+00				

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found
"E" = Manually edited"M" = Manually accepted
"A" = Nuclide specific abn. limit

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP171.SAMPLE]JKAHT1AA_121260827G.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4858.51	218	234	240	226	0.90		
6367.88	489	498	14	14	0.00		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAHV1AA

Detector: ALP171 8
Report Date: 12-Dec-06 06:56 PM
Acquire Date: 12-DEC-2006 08:27:16.19
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

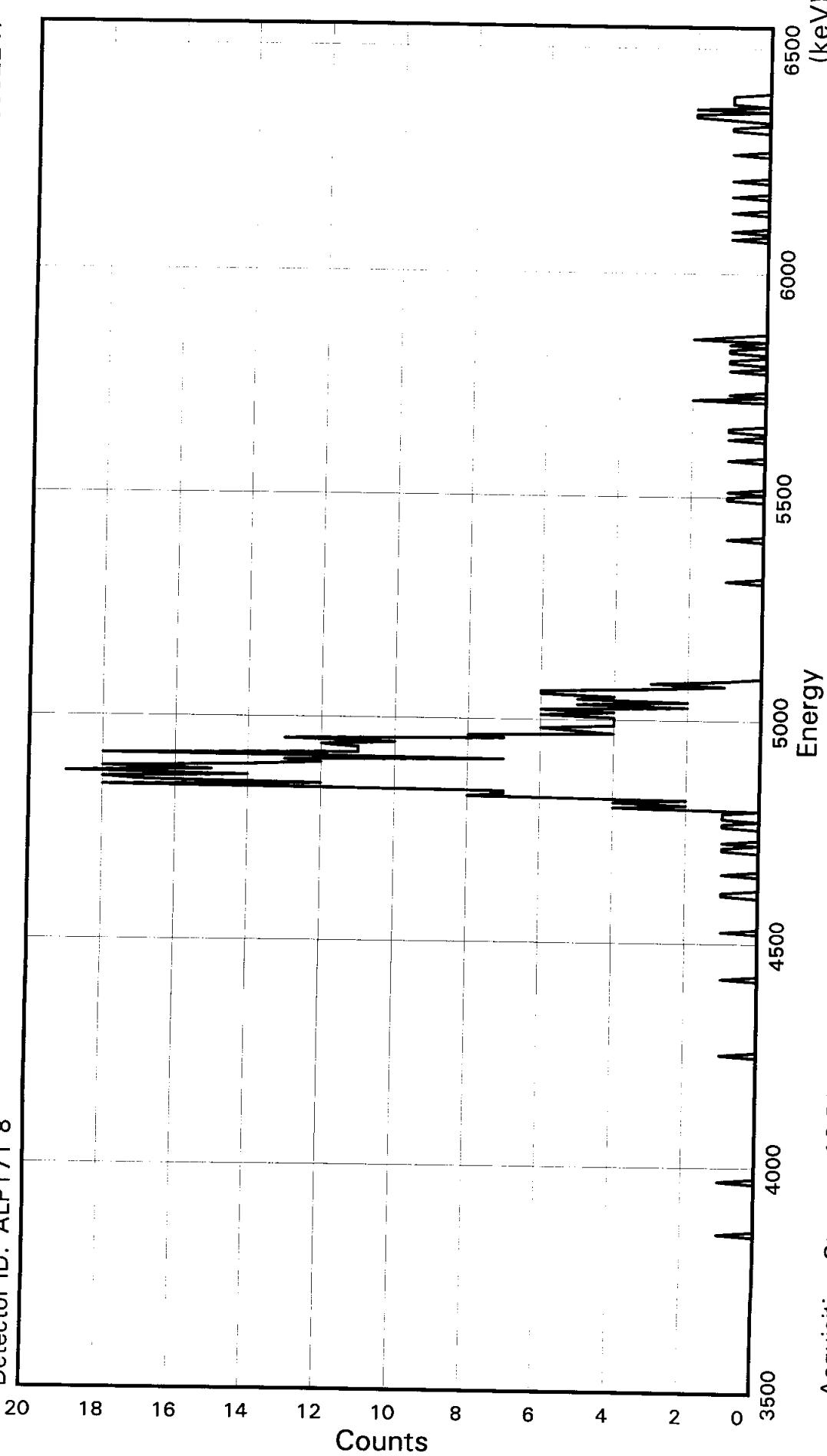
Nuclide	Smpl Count	Bkg Count	Count	Centrd Rate C/Min	Region Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	1	0	0.002	5423.2	117.7	306	326	
TH-229	402	2	0.803	4845.3	341.3	208	266	
TH-230	6	0	0.012	4687.7	135.4	181	204	
TH-232	1	1	0.001	4013.0	117.7	66	86	

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKAHV1AA
Detector ID: ALP171 8

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 08:27:16.19
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.53365E + 03
Slope: 5.88613E + 00
Quadrature: -2.17993E - 06

SAMPLE IDENTIITY: JKAHV1AA

TITLE : TH BRC

DETECTOR : ALP171 8
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKAHV1AA_121260827H.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 12-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 08:27:16 CALIB DATE : 06-DEC-2006 00:01:59

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3533.65 keV CONSTANT FWHM : 7.66667 Channels
SLOPE : 5.88613 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : -.217993E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing
 for Spectra Not Processed by Alp_rgn_cnts
 (Version: 29-Jun-92)

Sample Identity: JKAHV1AA

Flags Key

Detector: ALP171 8

Report Date: 12-Dec-06 04:48 PM

Intersect Region: @

Acquire Date: 12-DEC-2006 08:27:16.19

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
	1	0	51	0	101	1	151	1	201	6	251	0	301	0	351	0	401	0	451	0	501					
	2	0	52	0	102	0	152	0	202	4	252	1	302	0	352	0	402	0	452	0	502					
0	3	0	53	0	103	0	153	1	203	6	253	0	303	0	353	0	403	0	453	0	503					
0	4	1	54	0	104	0	154	0	204	2	254	0	304	0	354	0	404	1	454	0	504					
0	5	0	55	0	105	0	155	0	205	5	255	0	305	0	355	0	405	0	455	0	505					
0	6	0	56	0	106	0	156	0	206	2	256	0	306	1	356	0	406	0	456	0	506					
0	7	0	57	0	107	0	157	0	207	5	257	0	307	0	357	0	407	0	457	0	507					
0	8	0	58	0	108	0	158	0	208	4	258	0	308	0	358	0	408	0	458	0	508					
0	9	0	59	0	109	0	159	1	209	6	259	0	309	1	359	0	409	0	459	0	509					
0	10	0	60	0	110	0	160	1	210	6	260	0	310	1	360	0	410	0	460	0	510					
0	11	0	61	0	111	0	161	0	211	3	261	0	311	0	361	0	411	0	461	0	511					
0	12	0	62	0	112	0	162	1	212	1	262	0	312	0	362	0	412	0	462	0	512					
0	13	0	63	0	113	0	163	1	213	3	263	0	313	0	363	0	413	0	463							
0	14	0	64	0	114	0	164	1	214	1	264	0	314	0	364	0	414	1	464							
0	15	0	65	0	115	0	165	0	215	0	265	0	315	0	365	0	415	0	465							
0	16	0	66	0	116	0	166	4	216	0	266	0	316	0	366	0	416	0	466							
0	17	0	67	0	117	0	167	2	217	0	267	0	317	0	367	0	417	0	467							
0	18	0	68	0	118	0	168	4	218	0	268	1	318	0	368	0	418	0	468							
0	19	0	69	0	119	1	169	2	219	0	269	0	319	0	369	0	419	0	469							
0	20	0	70	0	120	0	170	8	220	0	270	0	320	0	370	0	420	0	470							
0	21	0	71	0	121	0	171	7	221	0	271	0	321	2	371	0	421	0	471							
0	22	0	72	1	122	0	172	7	222	0	272	0	322	0	372	0	422	0	472							
0	23	0	73	0	123	0	173	18	223	0	273	0	323	1	373	0	423	1	473							
0	24	1	74	0	124	0	174	12	224	0	274	0	324	0	374	0	424	1	474							
0	25	0	75	0	125	0	175	17	225	0	275	0	325	0	375	0	425	0	475							
0	26	0	76	0	126	0	176	18	226	0	276	0	326	0	376	0	426	0	476							
0	27	0	77	0	127	0	177	14	227	0	277	0	327	0	377	0	427	1	477							
0	28	0	78	0	128	0	178	19	228	0	278	0	328	0	378	0	428	2	478							
0	29	0	79	0	129	0	179	15	229	0	279	0	329	0	379	0	429	2	479							
0	30	0	80	0	130	0	180	18	230	0	280	0	330	0	380	0	430	0	480							
0	31	0	81	0	131	0	181	14	231	0	281	0	331	0	381	0	431	2	481							
0	32	0	82	0	132	0	182	12	232	0	282	0	332	1	382	1	432	0	482							
0	33	0	83	0	133	1	183	13	233	0	283	1	333	0	383	0	433	1	483							
0	34	0	84	0	134	1	184	7	234	0	284	1	334	0	384	0	434	1	484							
0	35	0	85	0	135	0	185	18	235	0	285	0	335	1	385	1	435	1	485							
0	36	0	86	0	136	0	186	11	236	0	286	1	336	1	386	0	436	1	486							
0	37	0	87	0	137	0	187	11	237	0	287	0	337	0	387	0	437	0	487							
0	38	0	88	0	138	0	188	11	238	0	288	0	338	0	388	0	438	0	488							
0	39	0	89	0	139	0	189	12	239	0	289	0	339	1	389	0	439	0	489							
0	40	0	90	0	140	0	190	10	240	0	290	0	340	1	390	0	440	0	490							
0	41	0	91	0	141	1	191	13	241	0	291	0	341	0	391	0	441	0	491							
0	42	0	92	0	142	0	192	7	242	0	292	0	342	1	392	1	442	0	492							
0	43	0	93	0	143	0	193	8	243	0	293	0	343	0	393	0	443	0	493							
0	44	0	94	0	144	0	194	4	244	0	294	0	344	2	394	0	444	0	494							
0	45	0	95	0	145	0	195	5	245	0	295	0	345	1	395	0	445	0	495							
0	46	0	96	0	146	0	196	6	246	0	296	0	346	0	396	0	446	0	496							
0	47	0	97	0	147	0	197	4	247	0	297	0	347	0	397	0	447	0	497							
0	48	0	98	0	148	0	198	4	248	0	298	1	348	0	398	1	448	0	498							
0	49	0	99	0	149	0	199	4	249	0	299	0	349	0	399	0	449	0	499							

0 50 0 100 0 150 1 200 4 250 0 300 0 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 12-DEC-2006 16:48:29

Configuration : \$DISK1:[ALP171.SAMPLE]JKAHV1AA_121260827H.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID : JKAHV1AA Sample quantity : 0.00000E+00 LITER
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3551.31 keV End energy : 6546.78 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00
No peaks were found

Configuration : \$DISK1:[ALP171.SAMPLE]JKAHV1AA_121260827H.CNF;1
Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 08:27:16
Sample ID : JKAHV1AA Sample quantity : 0.00000E+00 LITER
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Energy tolerance : 80.00 keV Half life ratio : 1.00
Errors propagated: No Systematic Error : 0.00 %
Efficiency type : Spline Efficiencies at : Peak Energy
Abundance limit : 70.00

Summary of Nuclide Activity

**** There are no nuclides meeting summary criteria ****

Flags: "K" = Keyline not found
"E" = Manually edited

"M" = Manually accepted
"A" = Nuclide specific abn. limit

Error Report (Date: 12-Dec-06 04:48 PM)

Program: Alp_rgn_cnts

subroutine: Main

Message: No trace pk or nucl

Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

**SEVERN
STL****SEVERN
STL**

STL RICHLAND

THORIUM ISOTOPIC COUNTING REQUEST

12/13

0307

C.R. Technician OK
Date Counted 12/12/0612/13/06
1340C.R. Analyst OK
Date Analyzed 12/13/06 endBackground See Alpha Analysis Report BRC
Review: 1/2/07 6.33224D

WorkOrder #	Tracer				TOTAL COUNTS			Det #	Comment
	ID	Activity	ROI Cts	BKG	Th-228 (5423 KeV)	Th-230 (4688 KeV)	Th-232 (4010 KeV)		
JKAHWIAA		10	0	0	0	See Alpha Analysis Report for ROI Information		171	
JKEN61AA		10	0	0	0	See Alpha Analysis Report for ROI Information		172	
JKEN61AC		10	0	0	0	See Alpha Analysis Report for ROI Information		173	
		10	0	0	0	See Alpha Analysis Report for ROI Information			
		10	0	0	0	See Alpha Analysis Report for ROI Information			
		10	0	0	0	See Alpha Analysis Report for ROI Information			
		10	0	0	0	See Alpha Analysis Report for ROI Information			
		10	0	0	0	See Alpha Analysis Report for ROI Information			
		10	0	0	0	See Alpha Analysis Report for ROI Information			

Comments:

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKAHW1AA

Detector: ALP171 1

Report Date: 13-Dec-06 03:12 PM

Acquire Date: 13-DEC-2006 05:20:52.32

Tracer Nuclide: TH-229

Sample Live Time: 499 minutes

Bkgrnd Live Time: 999 minutes

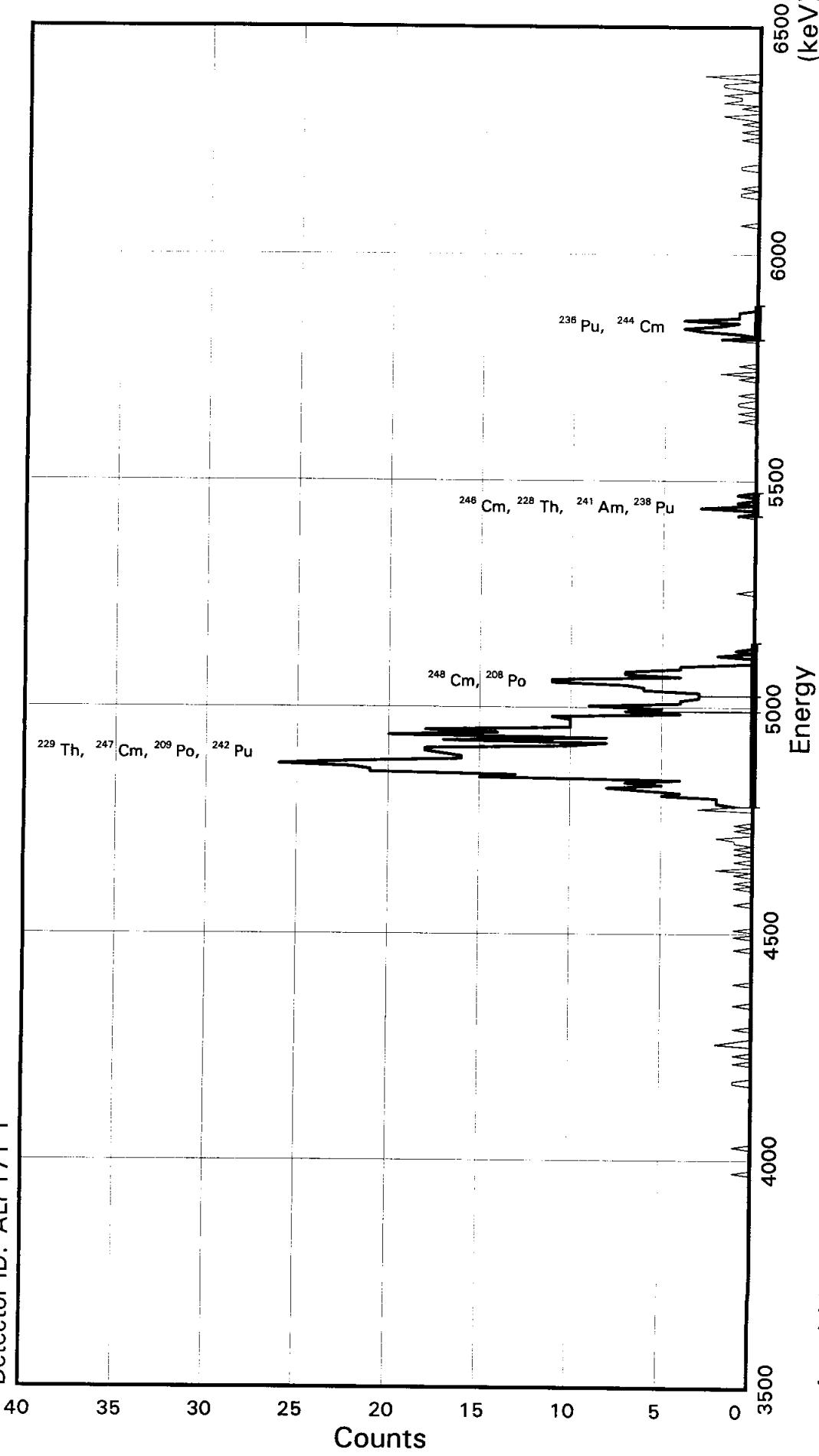
Nuclide	Smpl Count	Bkg Count	Count	Centrd Rate C/Min	Region Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	6	2	0.010	5423.2	139.8	316	340	
TH-229	532	2	1.063	4845.3	377.9	217	282	
TH-230	12	1	0.023	4687.7	121.9	189	210	
TH-232	2	0	0.004	4013.0	115.7	73	93	

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKAHW1AA
Detector ID: ALP171 1

Batch ID: 6332247



Acquisition Start: 13-DEC-2006 05:20:52.32
Preset Live Time: 0:08:20:00.00
Elapsed Live Time: 0:08:19:28.00

Energy Coefficients:
Offset: 3.50252E+03
Slope: 5.77229E+00
Quadrature: 8.30737E-05

SAMPLE IDENTIITY: JKAHW1AA

TITLE : TH BRC

DETECTOR : ALP171 1
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKAHW1AA_131260520A.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 13-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 13-DEC-2006 05:20:52 CALIB DATE : 06-DEC-2006 00:00:15

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3502.52 keV CONSTANT FWHM : 9.33333 Channels
SLOPE : 5.77229 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 8.307370E-05 keV/C^2 SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JKAHW1AA

Detector: ALP171 1

Flags Key

Report Date: 13-Dec-06 01:41 PM

P: Peak Identified

Acquire Date: 13-DEC-2006 05:20:52.32

I: Peak Intersect

Tracer Nuclide: TH-229

S: Single Non-peak Intersect

High Counts Limit: 36

M: Multiple Non-peak Intersect

Sample Live Time: 499 minutes

H: High Non-peak Sample Count

Bkgrnd Live Time: 999 minutes

A: Altered via ALP-RGN-EDIT

Nuclide	Smpl	Bkg	Intrsct	Count	Rate	Centrd	Region	Left	Rght	Left	Rght	Wdth	Wdth	Flags
Name	Count	Count	Count		C/Min	Energy	Width	Chnl	Chnl	Mult	Mult			
						keV	keV							
PO-208	79	0	0	0	0.158	5168.9	151.2	257	283	0.00	0.00			P
PO-209	450	2	0	0	0.899	4937.2	244.1	221	263	0.00	0.00			P
PO-210	-9999	-9999	0	-10.010		5358.4	244.7	300	342	0.00	0.00			M I
AC-227	3	2	6	0	0.004	6092.0	239.7	426	467	0.00	0.00			S
TH-227	3	2	6	0	0.004	6092.0	239.7	426	467	0.00	0.00			S
TH-228	6	1	0	0	0.011	5477.2	52.5	331	340	0.00	0.00			P
TH-229	450	2	0	0	0.899	4899.3	244.1	221	263	0.00	0.00			P
TH-230	-9999	-9999	0	-10.010		4741.7	243.9	194	236	0.00	0.00			M I
TH-232	3	1	2	0	0.005	4067.0	248.9	77	120	0.00	0.00			S
U-232	-9999	-9999	0	-10.010		5374.2	244.7	303	345	0.00	0.00			M I
U-234	-9999	-9999	0	-10.010		4828.6	244.0	209	251	0.00	0.00			M I
U-235	6	0	1	0	0.011	4451.8	243.6	144	186	0.00	0.00			S
PU-236	19	20	0	0	0.018	5821.7	75.9	398	411	0.00	0.00			P
NP-237	-9999	-9999	0	-10.010		4842.0	244.1	211	253	0.00	0.00			M I
PU-238	6	1	0	0	0.011	5553.0	52.5	331	340	0.00	0.00			P
U-238	-9999	-9999	0	-10.010		4252.0	249.1	109	152	0.00	0.00			M
PU-239	-9999	-9999	0	-10.010		5210.6	238.7	275	316	0.00	0.00			M I
AM-241	6	1	0	0	0.011	5539.6	52.5	331	340	0.00	0.00			P
AM-242M	-9999	-9999	0	-10.010		5260.8	244.6	283	325	0.00	0.00			M
CM-242	-9999	-9999	0	-10.010		6166.7	239.8	439	480	0.00	0.00			M
PU-242	450	2	0	0	0.899	4954.5	244.1	221	263	0.00	0.00			P
AM-243	-9999	-9999	0	-10.010		5329.3	244.6	295	337	0.00	0.00			M I
CM-244	19	20	0	0	0.018	5858.8	75.9	398	411	0.00	0.00			P
CM-246	6	1	0	0	0.011	5440.5	52.5	331	340	0.00	0.00			P
CM-247	450	2	0	0	0.899	4924.4	244.1	221	263	0.00	0.00			P
CM-248	79	0	0	0	0.158	5132.6	151.2	257	283	0.00	0.00			P

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JKAHW1AA

Flags Key

Detector: ALP171 1

Report Date: 13-Dec-06 01:41 PM

Intersect Region: @

Acquire Date: 13-DEC-2006 05:20:52.32

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
	1	0	51	0+	101	0@	151	0+	201	10@	251	0@	301	0	351	3@	401	0@	451	0	501		
	2	0	52	0+	102	0@	152	0+	202	10@	252	1@	302	0	352	4@	402	1@	452	0	502		
0	3	0	53	0+	103	1+	153	1+	203	10@	253	0@	303	0	353	2@	403	1@	453	0	503		
0	4	0	54	0+	104	0+	154	0+	204	10@	254	0@	304	0	354	1@	404	0@	454	0	504		
0	5	0	55	0+	105	0+	155	1+	205	11@	255	0@	305	0	355	4@	405	1@	455	0	505		
0	6	0	56	0+	106	0+	156	0+	206	4@	256	0@	306	0	356	1@	406	0@	456	0	506		
0	7	0	57	0+	107	0+	157	1+	207	7-	257	0@	307	0	357	1@	407	0@	457	0	507		
0	8	0	58	0+	108	0+	158	1+	208	5@	258	0@	308	0	358	1@	408	0@	458	0	508		
0	9	0	59	0@	109	0+	159	2@	209	9@	259	0@	309	0	359	0@	409	0@	459	0	509		
0	10	0	60	0@	110	0+	160	0@	210	4@	260	0@	310	0	360	0@	410	0@	460	0	510		
0	11	0	61	0@	111	0+	161	0-	211	4@	261	0@	311	0	361	0	411	0@	461	0	511		
0	12	0	62	0@	112	0+	162	1@	212	3@	262	0@	312	0	362	0	412	1@	462	0	512		
0	13	0	63	0@	113	0+	163	0@	213	3@	263	0@	313	0	363	0	413	1@	463				
0	14	0	64	0@	114	0+	164	1@	214	3@	264	0@	314	0	364	0	414	0@	464				
0	15	0	65	1@	115	0+	165	0@	215	6@	265	0@	315	0	365	0	415	0@	465				
0	16	0	66	1@	116	1+	166	0@	216	6@	266	0@	316	0	366	0	416	0@	466				
0	17	0	67	0@	117	0+	167	0@	217	7@	267	0@	317	1	367	0	417	0@	467				
0	18	0	68	0@	118	0+	168	0@	218	11@	268	0@	318	0	368	0	418	0-	468				
0	19	0	69	0@	119	0+	169	0@	219	11@	269	0@	319	0	369	0	419	0-	469				
0	20	0	70	0@	120	0+	170	3@	220	4@	270	0@	320	1	370	0	420	0-	470				
0	21	0	71	0-	121	1+	171	1@	221	7@	271	0@	321	0	371	0	421	0-	471				
0	22	0	72	0-	122	0+	172	2@	222	7@	272	0@	322	0	372	0	422	0-	472				
0	23	0	73	1-	123	0+	173	2@	223	4@	273	0@	323	1	373	0	423	1-	473				
0	24	0	74	0-	124	1+	174	2@	224	4@	274	0@	324	1	374	0	424	0-	474				
0	25	0	75	0-	125	0+	175	5@	225	0@	275	0@	325	0	375	0	425	0-	475				
0	26	0	76	1-	126	0+	176	4@	226	0@	276	0@	326	0	376	0@	426	1-	476				
0	27	0+	77	0-	127	0+	177	6@	227	0@	277	0@	327	1	377	0@	427	0-	477				
0	28	0+	78	0-	128	0+	178	8@	228	2@	278	0@	328	0	378	0@	428	0-	478				
0	29	0+	79	0-	129	0+	179	5@	229	0@	279	0@	329	0	379	0@	429	1-	479				
0	30	0+	80	2-	130	0+	180	7@	230	1@	280	0@	330	0	380	0@	430	0-	480				
0	31	1+	81	1-	131	0+	181	4@	231	0@	281	1-	331	0	381	0@	431	1	481				
0	32	0+	82	0-	132	0+	182	15@	232	0@	282	0@	332	0	382	0@	432	2	482				
0	33	0+	83	0-	133	0+	183	13@	233	0@	283	0@	333	1	383	0@	433	0	483				
0	34	0+	84	0-	134	1+	184	21@	234	0@	284	3@	334	0	384	0@	434	0	484				
0	35	0+	85	0-	135	0+	185	21@	235	0@	285	0@	335	2	385	0@	435	1	485				
0	36	0+	86	1-	136	0+	186	22@	236	0@	286	1@	336	0	386	0@	436	0	486				
0	37	0+	87	0-	137	0	187	26@	237	0@	287	0@	337	0	387	0@	437	2	487				
0	38	0+	88	0-	138	0	188	22@	238	0@	288	0@	338	1	388	0@	438	1	488				
0	39	0+	89	0-	139	0	189	16@	239	0@	289	1@	339	0	389	0-	439	1	489				
0	40	0+	90	0-	140	1	190	16@	240	0@	290	0@	340	0	390	0@	440	2	490				
0	41	1+	91	0-	141	0	191	17@	241	0@	291	0@	341	0	391	1@	441	0	491				
0	42	0+	92	0-	142	1	192	18@	242	0@	292	0@	342	0	392	0@	442	1	492				
0	43	0+	93	0-	143	0	193	18@	243	0@	293	0-	343	0	393	0@	443	2	493				
0	44	0+	94	0@	144	0+	194	10@	244	0@	294	0-	344	0	394	0@	444	2	494				
0	45	0+	95	1@	145	1+	195	8@	245	0-	295	0-	345	0	395	0@	445	0	495				
0	46	0+	96	0@	146	0+	196	17@	246	0@	296	0	346	0	396	0@	446	1	496				
0	47	0+	97	0@	147	2+	197	8@	247	0@	297	0	347	0	397	0@	447	3	497				
0	48	0+	98	0@	148	0+	198	20@	248	0@	298	0	348	2@	398	0@	448	0	498				
0	49	0+	99	0@	149	0+	199	14@	249	0@	299	0	349	0@	399	0@	449	0	499				
0	50	0+	100	0@	150	1+	200	18@	250	0@	300	0	350	1@	400	0@	450	0	500				

VMS Peak Search Report V1.9 Generated 13-DEC-2006 13:41:25

Configuration : \$DISK1:[ALP171.SAMPLE]JKAHW1AA_131260520A.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 13-DEC-2006 05:20:52
Sample ID : JKAHW1AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3519.84 keV End energy : 6479.71 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4899.32	450		0109.67	241.15	221	42	1.50E-02	4.7	
2	0	5058.37	79		0 46.18	268.50	257	26	2.64E-03	11.3	
3	0	5442.65	6		0 34.63	334.50	331	9	2.00E-04	40.8	
4	0	5842.61	19		0 40.41	403.06	398	13	6.34E-04	22.9	

Configuration : \$DISK1:[ALP171.SAMPLE]JKAHW1AA_131260520A.CNF;1
 Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
 Sample title : TH BRC
 Sample date : 24-OCT-2006 12:00:00 Acquisition date : 13-DEC-2006 05:20:52
 Sample ID : JKAHW1AA Sample quantity : 0.00000E+00 SAMPLE
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Energy tolerance : 80.00 keV Half life ratio : 1.00
 Errors propagated: No Systematic Error : 0.00 %
 Efficiency type : Spline Efficiencies at : Peak Energy
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	4
Number of unidentified lines	0
Number of lines tentatively identified by NID	4 100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma	0-Sigma Error	%Error	Flags
PO-208	2.90Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
TH-228	1.91Y	1.05	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-246	8500.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
<hr/>								
Total Activity :			0.000E+00	0.000E+00				

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma	0-Sigma Error	%Error	Flags
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-238	87.74Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
AM-241	432.20Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-244	18.10Y	1.01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-248	3.39E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
<hr/>								
Total Activity :			0.000E+00	0.000E+00				

Grand Total Activity : 0.000E+00 0.000E+00

Flags: "K" = Keyline not found
 "E" = Manually edited

"M" = Manually accepted
 "A" = Nuclide specific abn. limit

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP171.SAMPLE]JKAHW1AA_131260520A.CNF;1

Peak Energy	Left Chan	Right Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4899.31	221	263	450	456	-0.28		
5058.36	257	283	79	108	-3.26	35	0.00
5442.64	331	340	6	6	0.00		
5842.60	398	411	19	20	-0.23		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKENG1AA

Detector: ALP171 2
Report Date: 13-Dec-06 02:45 PM
Acquire Date: 12-DEC-2006 18:47:53.73
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

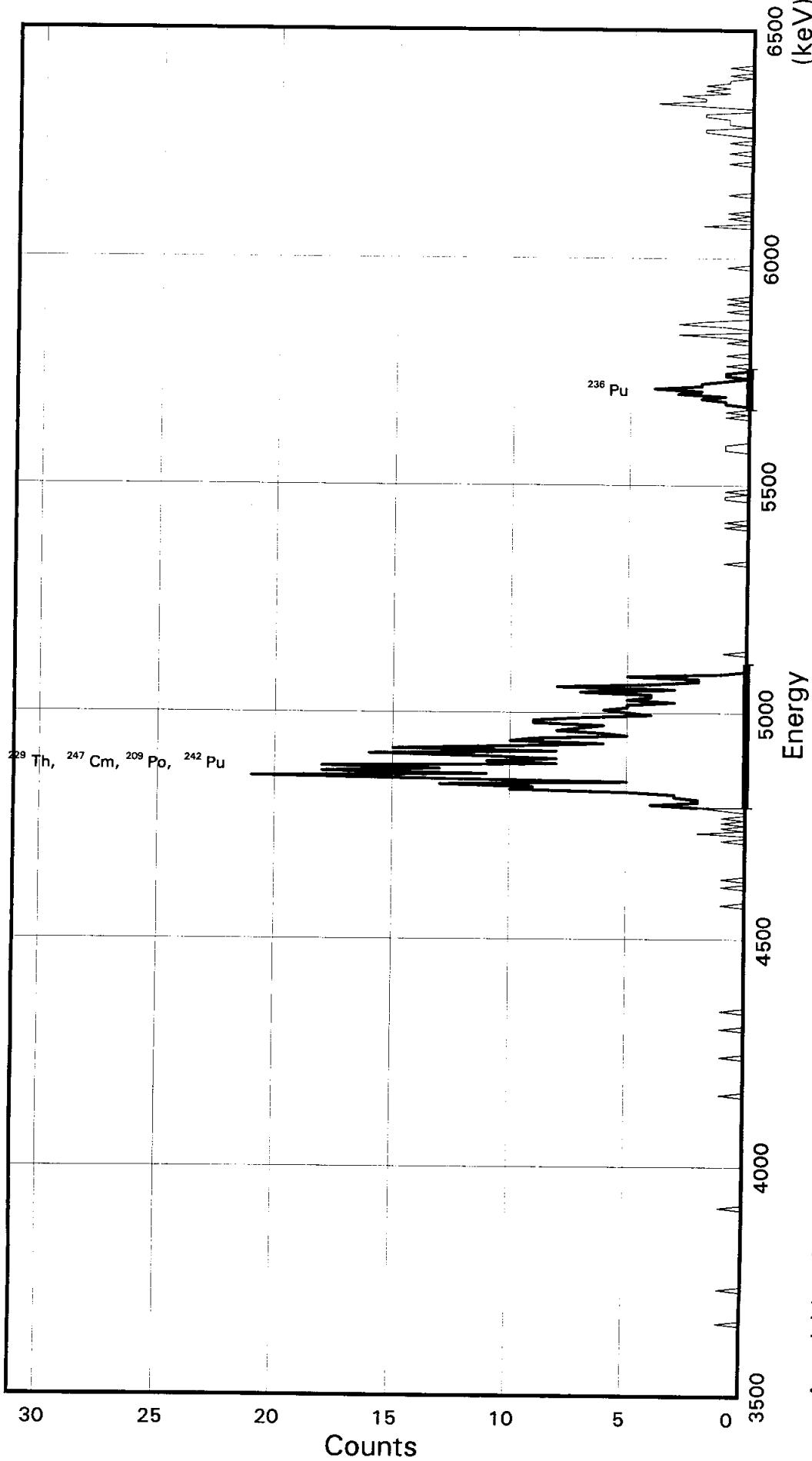
Nuclide	Smpl Name	Count	Bkg Count	Count	Centrd Rate C/Min	Region Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228		3	1	0.005	5423.2	130.1	317	340	
TH-229		398	4	0.793	4845.3	355.3	214	277	
TH-230		2	2	0.002	4687.7	112.6	189	209	
TH-232		1	0	0.002	4013.0	134.5	65	89	

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKENG1AA
Detector ID: ALP171 2

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 18:47:53.73
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.54083E+03
Slope: 5.58786E+00
Quadrature: 1.04264E-04

SAMPLE IDENIITY: JKENG1AA

TITLE : TH BRC

DETECTOR : ALP171 2
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKENG1AA_121261847B.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 13-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 18:47:53 CALIB DATE : 06-DEC-2006 00:00:27

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3540.83 keV CONSTANT FWHM : 10.50000 Channels
SLOPE : 5.58786 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 1.042640E-04 keV/C² SUM SENSITIVITY: 1.00000 %

Alpha Regions Report
(Version: 8-Oct-91)

Sample Identity: JKENG1AA

Detector: ALP171 2 Report Date: 13-Dec-06 03:08 AM Acquire Date: 12-DEC-2006 18:47:53.73 Tracer Nuclide: TH-229 High Counts Limit: 36 Sample Live Time: 499 minutes Bkgrnd Live Time: 999 minutes	Flags Key P: Peak Identified I: Peak Intersect S: Single Non-peak Intersect M: Multiple Non-peak Intersect H: High Non-peak Sample Count A: Altered via ALP-RGN-EDIT
---	--

Nuclide Name	Smpl Count	Bkg Count	Intrsct Count	Count	Centrd Rate C/Min	Region Energy keV	Width keV	Left		Rght		Flags
								Chnl	Left	Chnl	Rght	
PO-208	-9999	-9999		0	-10.010	5155.0	316.4	271	327	0.00	0.00	M I
PO-209	395	3		0	0.788	4923.3	315.9	223	279	0.00	0.00	P
PO-210	-9999	-9999		0	-10.010	5344.5	316.8	304	360	0.00	0.00	M
AC-227	-9999	-9999		0	-10.010	6078.1	312.6	434	489	0.00	0.00	M
TH-227	-9999	-9999		0	-10.010	6078.1	312.6	434	489	0.00	0.00	M
TH-228	-9999	-9999		0	-10.010	5463.3	317.0	325	381	0.00	0.00	M
TH-229	395	3		0	0.788	4885.4	315.9	223	279	0.00	0.00	M I
TH-230	-9999	-9999		0	-10.010	4727.8	315.5	195	251	0.00	0.00	M I
TH-232	1	1		2	0.001	4053.1	314.1	75	131	0.00	0.00	S
U-232	-9999	-9999		0	-10.010	5360.3	316.8	307	363	0.00	0.00	M
U-234	-9999	-9999		0	-10.010	4814.7	315.7	210	266	0.00	0.00	M I
U-235	-9999	-9999		0	-10.010	4437.9	320.5	143	200	0.00	0.00	M I
PU-236	21	14		0	0.028	5807.7	90.7	378	394	0.00	0.00	P
NP-237	-9999	-9999		0	-10.010	4828.1	315.7	213	269	0.00	0.00	M I
PU-238	-9999	-9999		0	-10.010	5539.1	317.2	339	395	0.00	0.00	M I
U-238	-9999	-9999		0	-10.010	4238.1	314.5	108	164	0.00	0.00	M
PU-239	-9999	-9999		0	-10.010	5196.7	316.5	278	334	0.00	0.00	M
AM-241	-9999	-9999		0	-10.010	5525.7	317.2	336	392	0.00	0.00	M I
AM-242M	-9999	-9999		0	-10.010	5246.9	316.6	287	343	0.00	0.00	M
CM-242	-9999	-9999		0	-10.010	6152.8	318.5	447	503	0.00	0.00	M
PU-242	395	3		0	0.788	4940.6	315.9	223	279	0.00	0.00	P
AM-243	-9999	-9999		0	-10.010	5315.4	316.7	299	355	0.00	0.00	M
CM-244	-9999	-9999		0	-10.010	5844.9	312.2	393	448	0.00	0.00	M
CM-246	-9999	-9999		0	-10.010	5426.6	317.0	319	375	0.00	0.00	M
CM-247	395	3		0	0.788	4910.5	315.9	223	279	0.00	0.00	P
CM-248	-9999	-9999		0	-10.010	5118.7	316.3	264	320	0.00	0.00	M I

End of Alpha Region Report
(Produced by Alp_rgn_cnts)

Alpha Spectrum Listing
(Version: 29-Jun-92)

Sample Identity: JKENG1AA

Flags Key

Detector: ALP171 2

Report Date: 13-Dec-06 03:08 AM

Intersect Region: @

Acquire Date: 12-DEC-2006 18:47:53.73

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
	1	0	51	0+	101	0@	151	0+	201	5@	251	0@	301	0@	351	0-	401	0@	451	2-	501		
	2	0	52	0+	102	0@	152	0+	202	6@	252	0@	302	0@	352	0-	402	1@	452	1-	502		
0	3	0	53	0+	103	0@	153	0+	203	8@	253	0@	303	0@	353	0-	403	0@	453	2-	503		
0	4	0	54	0+	104	0@	154	0+	204	7@	254	0@	304	0@	354	1-	404	1@	454	1	504		
0	5	0	55	0+	105	0@	155	0+	205	6@	255	0@	305	0@	355	0-	405	0@	455	1	505		
0	6	0	56	0+	106	0@	156	0+	206	9@	256	0@	306	0@	356	1-	406	0@	456	0	506		
0	7	0	57	0+	107	0@	157	0+	207	9@	257	0@	307	0@	357	3-	407	0@	457	1	507		
0	8	0	58	0@	108	0@	158	0+	208	7@	258	0@	308	0@	358	0-	408	0@	458	0	508		
0	9	0	59	0@	109	0@	159	0+	209	4@	259	0@	309	0@	359	0-	409	0@	459	0	509		
0	10	0	60	1@	110	0@	160	1@	210	5@	260	0@	310	0@	360	1-	410	0@	460	1	510		
0	11	0	61	0@	111	0@	161	0@	211	6@	261	0@	311	0@	361	3-	411	1@	461	0	511		
0	12	0	62	0@	112	0@	162	0@	212	5@	262	0@	312	1@	362	2-	412	0@	462	0	512		
0	13	0	63	0@	113	0@	163	2-	213	5@	263	0@	313	1@	363	0-	413	0@	463				
0	14	0	64	0@	114	0@	164	0@	214	3-	264	0@	314	1@	364	0-	414	0@	464				
0	15	0	65	0@	115	0+	165	1@	215	5@	265	0@	315	0@	365	0-	415	0@	465				
0	16	1	66	0@	116	0+	166	0@	216	4@	266	0@	316	0@	366	1-	416	0@	466				
0	17	0	67	0@	117	0+	167	1@	217	4@	267	0@	317	0@	367	0-	417	0@	467				
0	18	0	68	0@	118	0+	168	0@	218	7@	268	1@	318	0@	368	0-	418	0@	468				
0	19	0	69	0@	119	0+	169	1@	219	3@	269	0@	319	0@	369	1-	419	0@	469				
0	20	0	70	0@	120	0+	170	0@	220	8@	270	0@	320	0@	370	0-	420	0@	470				
1	21	0	71	0@	121	0+	171	0@	221	4@	271	0@	321	0@	371	1-	421	0@	471				
0	22	0	72	0@	122	0+	172	1@	222	2@	272	0@	322	0@	372	0-	422	0@	472				
0	23	0	73	0@	123	0+	173	2@	223	2@	273	0@	323	0@	373	0-	423	1@	473				
0	24	0	74	0@	124	0+	174	4@	224	5@	274	0@	324	0@	374	0-	424	0@	474				
0	25	0+	75	1@	125	0+	175	2@	225	1@	275	0@	325	1@	375	0-	425	0@	475				
0	26	0+	76	0@	126	0+	176	2@	226	0@	276	0@	326	0@	376	0-	426	0@	476				
0	27	0+	77	0@	127	0+	177	3@	227	0@	277	0@	327	1@	377	0-	427	1@	477				
0	28	0+	78	0@	128	0+	178	3@	228	0@	278	0@	328	0@	378	0-	428	0@	478				
0	29	0+	79	0@	129	0+	179	5@	229	0@	279	0@	329	0@	379	0-	429	0@	479				
0	30	0+	80	0@	130	0+	180	10@	230	0@	280	0@	330	1@	380	0-	430	0@	480				
0	31	0+	81	0@	131	0+	181	9@	231	0@	281	0@	331	1@	381	0-	431	1@	481				
0	32	0+	82	0-	132	0+	182	13@	232	0@	282	1@	332	2@	382	0-	432	0@	482				
0	33	0+	83	0-	133	0+	183	5@	233	1@	283	0@	333	1@	383	1-	433	0@	483				
1	34	0+	84	0-	134	0+	184	13@	234	0@	284	1@	334	3@	384	0@	434	1@	484				
0	35	0+	85	0-	135	1+	185	21@	235	0@	285	0@	335	2@	385	0@	435	2@	485				
0	36	0+	86	1-	136	0+	186	11@	236	0@	286	0@	336	4@	386	0@	436	2@	486				
0	37	0+	87	0-	137	0+	187	18@	237	0@	287	0@	337	2@	387	0@	437	0@	487				
0	38	0+	88	0-	138	0+	188	13@	238	0@	288	0@	338	2@	388	0@	438	1@	488				
0	39	0+	89	0-	139	0+	189	18@	239	0@	289	0@	339	1@	389	0@	439	1@	489				
0	40	0+	90	0-	140	0+	190	8@	240	0@	290	0@	340	0@	390	0@	440	1-	490				
0	41	0+	91	0-	141	0+	191	11@	241	0@	291	0@	341	1@	391	0@	441	2-	491				
0	42	0+	92	0-	142	1+	192	8@	242	0@	292	0@	342	1@	392	0@	442	2-	492				
0	43	0+	93	1@	143	0+	193	11@	243	0@	293	1@	343	0+	393	0@	443	0-	493				
0	44	0+	94	0@	144	0+	194	16@	244	0@	294	1@	344	0@	394	0@	444	0-	494				
0	45	0+	95	0@	145	1@	195	8@	245	0@	295	0@	345	1@	395	0@	445	2-	495				
0	46	0+	96	0@	146	0@	196	15@	246	0@	296	1@	346	0-	396	0@	446	4-	496				
0	47	0+	97	0@	147	0@	197	10@	247	0@	297	0@	347	0-	397	0@	447	2-	497				
0	48	0+	98	0@	148	0@	198	6@	248	0@	298	0@	348	0-	398	0@	448	2-	498				
0	49	0+	99	0@	149	0@	199	10@	249	0@	299	0@	349	1-	399	2@	449	3-	499				
0	50	0+	100	0@	150	0@	200	9@	250	0@	300	0@	350	0-	400	0@	450	1-	500				

VMS Peak Search Report V1.9 Generated 13-DEC-2006 03:08:31

Configuration : \$DISK1:[ALP171.SAMPLE]JKENG1AA_121261847B.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 18:47:53
Sample ID : JKENG1AA Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3557.59 keV End energy : 6429.15 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4885.39	395		0 94.99	239.55	223	56	1.32E-02	5.0	
2	0	5710.44	21		0 33.53	385.50	378	16	7.01E-04	21.8	

Configuration : \$DISK1:[ALP171.SAMPLE]JKENG1AA_121261847B.CNF;1
 Analyses by : ALPHA V1.8, PEAKEFF V2.2, NID V3.3
 Sample title : TH BRC
 Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 18:47:53
 Sample ID : JKENG1AA Sample quantity : 0.00000E+00 SAMPLE
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Energy tolerance : 80.00 keV Half life ratio : 1.00
 Errors propagated: No Systematic Error : 0.00 %
 Efficiency type : Spline Efficiencies at : Peak Energy
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	2
Number of unidentified lines	0
Number of lines tentatively identified by NID	2 100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr PCI/SAMPLE	0-Sigma
					0-Sigma Error	%Error
PO-209	102.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00
<hr/>						
Total Activity :			0.000E+00	0.000E+00		

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr PCI/SAMPLE	0-Sigma
					0-Sigma Error	%Error
TH-229	7340.00Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.00
PU-242	3.73E+05Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00
CM-247	1.56E+07Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.00
<hr/>						
Total Activity :			0.000E+00	0.000E+00		
Grand Total Activity : 0.000E+00 0.000E+00						

Flags: "K" = Keyline not found
 "E" = Manually edited

"M" = Manually accepted
 "A" = Nuclide specific abn. limit

ITRD PEAK TEST REPORT (Version 16-May-94)

Configuration: \$DISK1:[ALP171.SAMPLE]JKENG1AA_121261847B.CNF;1

Peak Energy	Left Chan	Rght Chan	Peak Area	Total Counts	Diff/ StDev	Overlap Counts	Multiplet Diff/StDev
4885.38	223	279	395	394	0.05		
5710.44	378	394	21	21	0.00		

End of Report

Alpha Analysis Report
(Version: 7-Feb-98)

Sample Identity: JKENG1AC

Detector: ALP171 3
Report Date: 13-Dec-06 02:47 PM
Acquire Date: 12-DEC-2006 18:47:53.73
Tracer Nuclide: TH-229
Sample Live Time: 499 minutes
Bkgrnd Live Time: 999 minutes

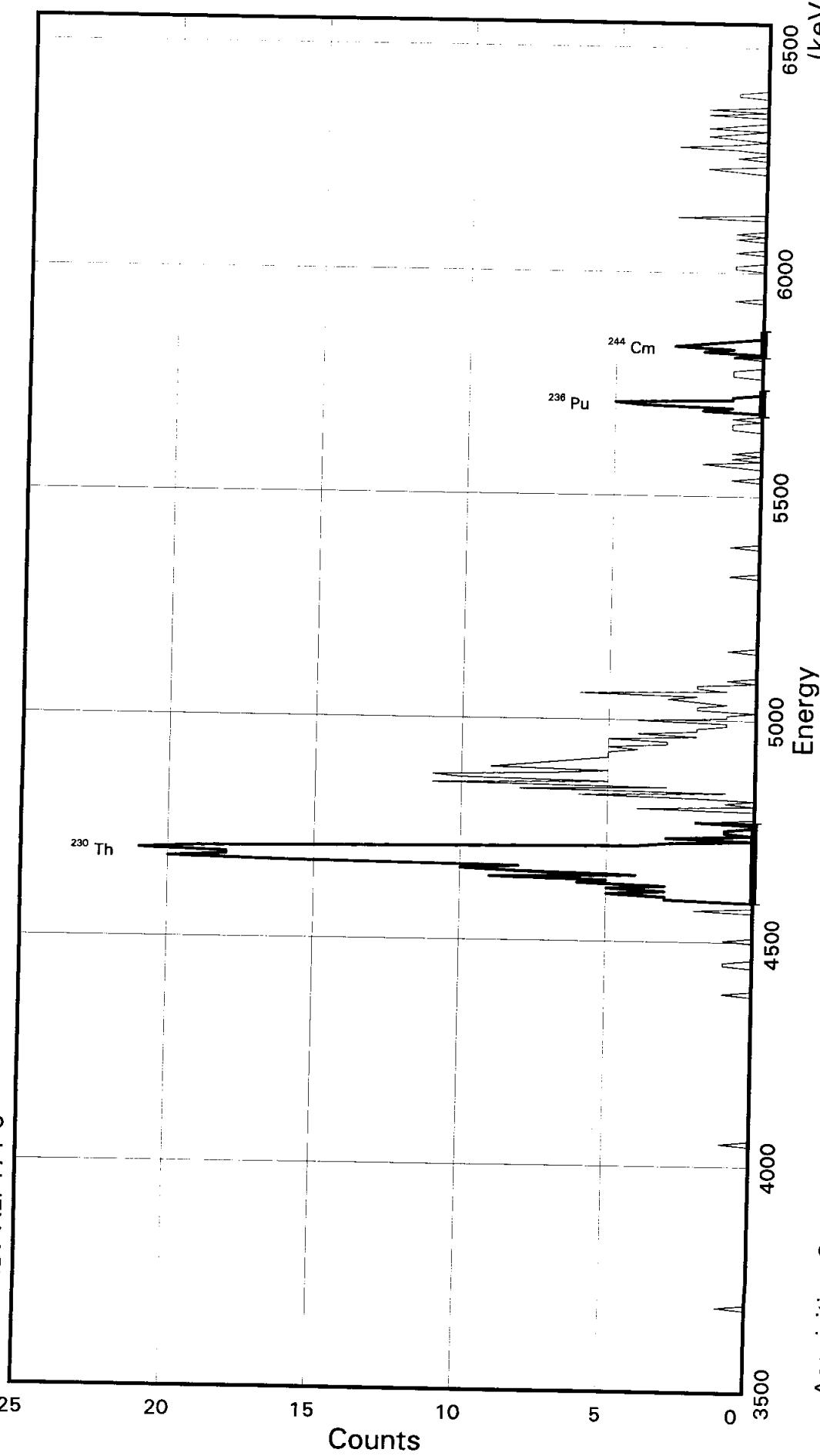
Nuclide Name	Smpl Count	Bkg Count	Count	Centrd Rate C/Min	Region Energy keV	Width keV	Left Chnl	Rght Chnl
TH-228	2	4	0.000	5423.2	137.4	305	328	
TH-229	185	2	0.368	4845.3	358.0	209	269	
TH-230	203	1	0.405	4687.7	131.2	184	206	
TH-232	1	1	0.001	4013.0	136.9	72	95	

End of Alpha Region Report
(Produced by ANAL Report)

STL Richland WA.
TH BRC

Sample ID: JKENG1AC
Detector ID: ALP171 3

Batch ID: 6332247



Acquisition Start: 12-DEC-2006 18:47:53.73
Preset Live Time: 0 08:20:00.00
Elapsed Live Time: 0 08:19:28.00

Energy Coefficients:
Offset: 3.49774E+03
Slope: 5.94170E+00
Quadrature: 5.38613E-05

SAMPLE IDENTIITY: JKENG1AC

TITLE : TH BRC

DETECTOR : ALP171 3
CONFIGURATION NAME : \$DISK1:[ALP171.SAMPLE]JKENG1AC_121261847C.CN
F;1

ACQUIRE DATE of BACKGROUND: 06-DEC-2006 07:09:44

REPORT DATE : 13-Dec-06 SAMPLE DATE: 24-OCT-2006 12:00:00
ACQUIRE DATE: 12-DEC-2006 18:47:53 CALIB DATE : 06-DEC-2006 00:00:42

PRESET LIVE TIME: 0 08:20:00 ELAPSED LIVE TIME: 0 08:19:28

OFFSET : 3497.74 keV CONSTANT FWHM : 9.50000 Channels
SLOPE : 5.94170 keV/C SENSITIVITY : 3.00000 Std Dev's
QUAD COEFF : 5.386130E-05 keV/C² SUM SENSITIVITY: 1.00000 %

Alpha Spectrum Listing
 for Spectra Not Processed by Alp_rgn_cnts
 (Version: 29-Jun-92)

Sample Identity: JKENG1AC
 Detector: ALP171 3

Flags Key

Report Date: 13-Dec-06 03:08 AM
 Acquire Date: 12-DEC-2006 18:47:53.73

Intersect Region: @

Non-Intersect Region: +, -

Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn	Cnt	F	Chn
	1	0	51	0	101	0	151	18	201	1	251	0	301	0	351	0	401	0	451	0	501		
	2	0	52	0	102	0	152	21	202	4	252	0	302	1	352	0	402	0	452	0	502		
0	3	0	53	0	103	0	153	19	203	1	253	0	303	0	353	0	403	0	453	0	503		
0	4	0	54	0	104	0	154	12	204	1	254	0	304	0	354	0	404	0	454	0	504		
0	5	0	55	0	105	0	155	4	205	0	255	0	305	0	355	0	405	0	455	0	505		
0	6	0	56	0	106	0	156	3	206	2	256	1	306	0	356	0	406	0	456	0	506		
0	7	0	57	0	107	0	157	0	207	2	257	0	307	0	357	0	407	1	457	0	507		
0	8	0	58	0	108	0	158	3	208	1	258	0	308	0	358	0	408	2	458	0	508		
0	9	0	59	0	109	0	159	0	209	2	259	0	309	0	359	1	409	0	459	0	509		
0	10	0	60	0	110	1	160	1	210	3	260	0	310	0	360	0	410	0	460	0	510		
0	11	0	61	0	111	1	161	1	211	2	261	0	311	1	361	0	411	0	461	0	511		
0	12	0	62	0	112	0	162	0	212	6	262	0	312	1	362	0	412	1	462	0	512		
0	13	0	63	0	113	0	163	0	213	1	263	0	313	1	363	0	413	0	463				
0	14	0	64	0	114	0	164	2	214	2	264	0	314	0	364	0	414	0	464				
0	15	0	65	0	115	0	165	0	215	2	265	0	315	1	365	0	415	1	465				
0	16	0	66	0	116	0	166	0	216	0	266	0	316	0	366	0	416	3	466				
0	17	0	67	0	117	0	167	0	217	1	267	1	317	0	367	0	417	1	467				
0	18	0	68	0	118	0	168	0	218	0	268	0	318	2	368	0	418	0	468				
0	19	0	69	0	119	1	169	4	219	0	269	0	319	1	369	0	419	1	469				
0	20	0	70	0	120	0	170	0	220	0	270	0	320	4	370	0	420	2	470				
0	21	0	71	0	121	0	171	1	221	0	271	0	321	5	371	1	421	1	471				
0	22	0	72	0	122	0	172	0	222	0	272	0	322	1	372	1	422	0	472				
0	23	0	73	0	123	0	173	2	223	0	273	0	323	1	373	0	423	2	473				
0	24	0	74	0	124	0	174	6	224	0	274	0	324	0	374	0	424	1	474				
0	25	0	75	0	125	0	175	1	225	0	275	0	325	0	375	0	425	0	475				
0	26	0	76	0	126	0	176	8	226	0	276	0	326	0	376	0	426	0	476				
0	27	0	77	0	127	0	177	3	227	0	277	0	327	0	377	1	427	0	477				
0	28	0	78	0	128	0	178	11	228	1	278	0	328	0	378	0	428	2	478				
0	29	0	79	0	129	0	179	5	229	0	279	0	329	0	379	0	429	0	479				
0	30	0	80	0	130	0	180	10	230	0	280	0	330	0	380	0	430	2	480				
0	31	0	81	0	131	2	181	11	231	0	281	0	331	1	381	0	431	0	481				
1	32	0	82	0	132	0	182	7	232	0	282	0	332	1	382	1	432	0	482				
0	33	0	83	0	133	0	183	5	233	0	283	0	333	1	383	0	433	0	483				
0	34	0	84	0	134	0	184	9	234	0	284	0	334	0	384	1	434	0	484				
0	35	0	85	0	135	3	185	8	235	0	285	0	335	0	385	0	435	1	485				
0	36	0	86	0	136	3	186	7	236	0	286	0	336	0	386	0	436	1	486				
0	37	0	87	0	137	5	187	6	237	0	287	0	337	0	387	0	437	0	487				
0	38	0	88	0	138	3	188	5	238	0	288	0	338	1	388	0	438	0	488				
0	39	0	89	0	139	5	189	5	239	0	289	0	339	0	389	0	439	0	489				
0	40	0	90	0	140	3	190	5	240	0	290	0	340	2	390	3	440	0	490				
0	41	0	91	0	141	6	191	4	241	0	291	0	341	1	391	0	441	0	491				
0	42	0	92	0	142	5	192	5	242	0	292	1	342	3	392	0	442	0	492				
0	43	1	93	0	143	9	193	3	243	0	293	0	343	2	393	0	443	0	493				
0	44	0	94	0	144	4	194	3	244	0	294	0	344	1	394	0	444	0	494				
0	45	0	95	0	145	8	195	5	245	0	295	0	345	0	395	0	445	0	495				
0	46	0	96	0	146	10	196	2	246	0	296	0	346	0	396	0	446	0	496				
0	47	0	97	0	147	8	197	4	247	0	297	1	347	0	397	0	447	0	497				
0	48	0	98	0	148	16	198	2	248	0	298	2	348	0	398	0	448	0	498				
0	49	0	99	1	149	20	199	2	249	0	299	0	349	0	399	0	449	0	499				

0 50 0 100 0 150 18 200 1 250 0 300 1 350 0 400 0 450 0 500

VMS Peak Search Report V1.9 Generated 13-DEC-2006 03:08:39

Configuration : \$DISK1:[ALP171.SAMPLE]JKENG1AC_121261847C.CNF;1
Analyses by : ALPHA V1.8
Sample title : TH BRC
Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 18:47:53
Sample ID : JKENG1AC Sample quantity : 0.00000E+00 SAMPLE
Sample type : disk Sample geometry :
Detector name : ALP171 1 Detector geometry:
Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
Start energy : 3515.56 keV End energy : 6554.00 keV
Sensitivity : 3.00 Sum Sensitivity : 1.00

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	4691.51	211	0	47.53	200.55	184	30	7.04E-03	6.9	
2	0	5704.04	14	0	29.71	370.08	366	10	4.67E-04	26.7	
3	0	5831.42	10	0	29.71	391.37	388	10	3.34E-04	31.6	

VMS Nuclide Identification Report V3.0 Generated 13-DEC-2006 03:08:42

Configuration : \$DISK1:[ALP171.SAMPLE]JKENG1AC_121261847C.CNF;1
 Analyses by : ALPHA V1.8,PEAKEFF V2.2,NID V3.3
 Sample title : TH BRC
 Sample date : 24-OCT-2006 12:00:00 Acquisition date : 12-DEC-2006 18:47:53
 Sample ID : JKENG1AC Sample quantity : 0.00000E+00 SAMPLE
 Sample type : disk Sample geometry :
 Detector name : ALP171 1 Detector geometry:
 Elapsed live time: 0 08:19:28.00 Elapsed real time: 0 08:19:28.00 0.0%
 Energy tolerance : 80.00 keV Half life ratio : 1.00
 Errors propagated: No Systematic Error : 0.00 %
 Efficiency type : Spline Efficiencies at : Peak Energy
 Abundance limit : 70.00

Summary of Nuclide Activity

Total number of lines in spectrum	3
Number of unidentified lines	0
Number of lines tentatively identified by NID	3 100.00%

Nuclide Type : NP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma	0-Sigma Error	%Error	Flags
TH-230	7.54E+04Y	1.00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
<hr/>								
Total Activity :			0.000E+00	0.000E+00				

Nuclide Type : AP

Nuclide	Hlife	Decay	Uncorrected PCI/SAMPLE	Decay Corr PCI/SAMPLE	Decay Corr 0-Sigma	0-Sigma Error	%Error	Flags
PU-236	2.86Y	1.03	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
CM-244	18.10Y	1.01	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.00	
<hr/>								
Total Activity :			0.000E+00	0.000E+00				
<hr/>								
Grand Total Activity : 0.000E+00					0.000E+00			

Flags: "K" = Keyline not found
 "E" = Manually edited

"M" = Manually accepted
 "A" = Nuclide specific abn. limit

Error Report (Date: 13-Dec-06 03:08 AM)

Program: Alp_rgn_cnts

subroutine: Main

Message: No trace pk or nucl

Record being processed: 7

System Status Message:

%NONAME-W-NOMSG, Message number 00000000

ALPHA

SAMPLE AND QC DATA

Lot No., Due Date: J6K220385,J6K220386; 12/19/2006
Client, Site: 536403; AIR MONITORING Yerington Mine
QC Batch No., Method Test: 6332250; RALPHA-A Alpha by GPC-Am
SDG, Matrix: 33127,33128; FILTER

1.0 COC

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?

Yes No N/A

2.0 QC Batch

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?

Yes No N/A

2.2 Are the QC appropriate for the analysis included in the batch?

Yes No N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?

Yes No N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?

Yes No N/A

3.0 QC & Samples

3.1 Is the blank results, yield, and MDA within contract limits?

Yes No N/A

3.2 Is the LCS result, yield, and MDA within contract limits?

Yes No N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?

Yes No N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?

Yes No N/A

3.5 Are the sample yields and MDAs within contract limits?

Yes No N/A

4.0 Raw Data

4.1 Were results calculated in the correct units?

Yes No N/A

4.2 Were analysis volumes entered correctly?

Yes No N/A

4.3 Were Yields entered correctly?

Yes No N/A

4.4 Were spectra reviewed/meet contractual requirements?

Yes No N/A

4.5 Were raw counts reviewed for anomalies?

Yes No N/A

5.0 Other

5.1 Are all nonconformances included and noted?

Yes No N/A

5.2 Are all required forms filled out?

Yes No N/A

5.3 Was the correct methodology used?

Yes No N/A

5.4 Was transcription checked?

Yes No N/A

5.5 Were all calculations checked at a minimum frequency?

Yes No N/A

5.6 Are worksheet entries complete and correct?

Yes No N/A

6.0 Comments on any No response:

Sample ID: 4332250

Review Item

First Review Checked by
KATHY WILHELM
Second Level Review

(QC) Batch Number:

4332250

Review Item	Yes (Y)	No (N)	N/A (N)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	/		
2. Is the sample Minimum Detectable Activity \leq the Contract Detection Limit?	/		
3. Are the correct isotopes reported?	/		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result \leq the Contract Detection Limit?	/		
2. Does the blank result meet the Contract criteria?	/		
3. Is the blank result \leq the Contract Detection Limit?	/		
4. Is the blank result $>$ the Contract Detection Limit but the sample result \leq the Contract Detection Limit?	/		
5. Is the LCS recovery with contract acceptance criteria?	/		
6. Is the LCS Minimum Detectable Activity \leq the Contract Detection Limit?	/		
7. Do the duplicate sample results and yields meet acceptance criteria?	/		/
C. Other			
1. Are all Nonconformances included and noted?			/
2. Are all required forms filled out?			
3. Was the correct methodology used?	/		
4. Was transcription checked?	/		
5. Were all calculations checked at a minimum frequency?	/		
6. Were units checked?	/		

Comments on any "No" response:

Second Level Review:

Kerry A Adam

Date: 12-19-06

12/13/2006 1:01:45 PM

STL

536403, Brown and Caldwell
Caldwell

AnalyDueDate: 12/18/2006

Batch: 6332250 FILTER

SEQ Batch, Test: None

PM, Quote: SA, 63174

pCi/samp

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: WoodT

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On (24hr) Circle	CR Analyst, InitDate	Comments:
8 JKAHV-1-AE J6K220386-4-SAMP 	0.833sa	12.58g,in		1.5	0.7	150	10 C	1152	12/14/06 r	
10/30/2006 11:11:00			AmfRec: FILTER	#Containers: 1						
9 JKAHW-1-AE J6K220386-5-SAMP 	0.833sa	12.54g,in		0.7			Scr: Alpha:	10 d		Beta:
10/30/2006 11:45			AmfRec: FILTER	#Containers: 1			Scr: Alpha:			Beta:
10 JKENK-1-AA-B J6K280000-250-BLK 		12.89g,in					Scr: Alpha:	10 F		Beta:
10/24/2006 11:55			AmfRec:	#Containers: 1			Scr: Alpha:			Beta:
11 JKENK-1-AC-C J6K280000-250-LCS 		12.76g,in		ASC0423 10/23/06 pd 02/09/06,r		0.5		10A 1036	12/17/06 r	
10/24/2006 11:55			AmfRec:	#Containers: 1			Scr: Alpha:			Beta:
Comments:										

1% collection added to ex. samp. 12/14/06 APA

All Clients for Batch:
536403, Brown and Caldwell

Brown & Caldwell , SA , 63174

JKAGNIAE-SAMP Constituent List:

ALPHA RDL:20 pCi / sam LCL: UCL: RPD:

JKENK1AA-BLK:

ALPHA RDL:20 pCi / sam LCL: UCL: RPD:

JKENK1AC-LCS:

ALPHA RDL:20 pCi / sam LCL: UCL: RPD:

JKAGNIAE-SAMP Calc Info:

Uncert Level (#s): 2 Decay to Sndt: Y Blk Subt.: N Sci. Not.: x ODRs: B

STL Richland Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2
Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

ISV - Insufficient Volume for Analysis

WO Cnt: 11

ICOC v4.8.26

12/18/2006 1:26:57 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/18/2005, 12/23/2006, Batch: '6332250', User: *ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
6332250					
AC		CalcC	WoodT	11/30/2006 8:54:00	
SC		wagarr	IsBatched	11/28/2006 10:37:01 AM	ICOC_RADCALC v4.8.24
SC		WoodT	InPrep	11/30/2006 8:54:00 AM	RICH-RC-5016 REVISION 5
SC		WoodT	Prep2C	12/4/2006 8:00:15 AM	RICH-RC-5016 REVISION 5
SC		AshworthA	InPrep2	12/13/2006 7:32:37 AM	RICH-RC-5014 REVISION 6
SC		AshworthA	Prep2C	12/14/2006 3:23:06 PM	RICH-RC-5014 REVISION 6
SC		DAWKINSO	InCnt1	12/14/2006 3:37:38 PM	RICH-RD-0003 REVISION 4
SC		StringerR	CalcC	12/17/2006 11:28:09 AM	RICH-RD-0003 REVISION 4
AC		WoodT	12/4/2006 8:00:15		
AC		AshworthA	12/13/2006 7:32:37		
AC		AshworthA	12/14/2006 3:23:06		
AC		DAWKINSO	12/14/2006 3:37:38		
AC		StringerR	12/17/2006 11:28:09		

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt:6

ICOCPFactions v4.8.26

12/18/2006 1:26:56 PM

Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id	Lot Sample	Client Id	Matrix	Received Date	Sample Date	Units	Expected Yield	Volumes
	Method	RTst Qc	Analysis Date	Cnt Uncert	Tot Uncer	mgaa			
33127	9JKAG110	J6K2203852	P-0783	FILTER	11/21/2006		10/24/2006 12:10:00 PM		
ALPHA	BAS7	0	12/16/2006 7:47:04	2.5819E+00	1.258E+00	1.291E+00	4.329E+00	PCI/SA	1.0
RA-226	BXTE	0	12/12/2006 1:02:00	PM1.081E-01	1.587E-01	1.591E-01	5.915E-01	PCI/SA	1.033
RA-228	BXTF	0	12/13/2006 5:56:58	-9.3275E-02	3.353E-01	3.353E-01	1.728E+00	PCI/SA	0.949
TH-228	9NS1	0	12/12/2006 12:37:00	2.3067E-01	1.048E-01	1.067E-01	2.516E-01	PCI/SA	0.92
TH-230	9NS1	0	12/12/2006 12:37:00	1.598E-01	9.369E-02	9.469E-02	2.94E-01	PCI/SA	0.92
TH-232	9NS1	0	12/12/2006 12:37:00	3.9949E-02	4.466E-02	4.48E-02	2.396E-01	PCI/SA	0.92
33127	9JKAG410	J6K2203853	P-0784	FILTER	11/21/2006		10/24/2006 12:30:00 PM		
ALPHA	BAS7	0	12/16/2006 7:47:04	4.2505E+00	1.654E+00	1.724E+00	5.627E+00	PCI/SA	1.0
RA-226	BXTE	0	12/12/2006 1:06:00	PM2.1612E-01	1.589E-01	1.606E-01	5.518E-01	PCI/SA	1.036
RA-228	BXTF	0	12/13/2006 5:56:58	1.4597E+00	3.839E-01	4.165E-01	1.568E+00	PCI/SA	0.933
TH-228	9NS1	0	12/12/2006 12:37:00	8.2605E-02	1.066E-01	1.069E-01	4.629E-01	PCI/SA	0.812
TH-230	9NS1	0	12/12/2006 12:37:00	2.8851E-01	1.311E-01	1.336E-01	3.146E-01	PCI/SA	0.812
TH-232	9NS1	0	12/12/2006 12:37:00	7.8685E-02	7.868E-02	7.9E-02	3.146E-01	PCI/SA	0.812
33127	9JKAG710	J6K2203854	000547	FILTER	11/21/2006		10/24/2006 12:35:00 PM		
ALPHA	BAS7	0	12/16/2006 7:47:04	5.9384E+00	1.643E+00	1.783E+00	4.383E+00	PCI/SA	1.0
RA-226	BXTE	0	12/12/2006 1:12:00	PM1.1649E-01	1.078E-01	1.085E-01	3.898E-01	PCI/SA	1.048
RA-228	BXTF	0	12/13/2006 5:56:58	-2.4878E-01	3.255E-01	3.255E-01	1.726E+00	PCI/SA	0.948
TH-228	9NS1	0	12/12/2006 12:37:00	3.5828E-01	1.372E-01	1.407E-01	2.865E-01	PCI/SA	0.966
TH-230	9NS1	0	12/12/2006 12:37:00	1.3651E-01	8.203E-02	8.29E-02	2.729E-01	PCI/SA	0.966
TH-232	9NS1	0	12/12/2006 12:37:00	1.3651E-01	8.203E-02	8.29E-02	2.729E-01	PCI/SA	0.966
33127	9JKAGW10	J6K2203851	P-0782	FILTER	11/21/2006		10/24/2006 11:55:00 AM		
ALPHA	BAS7	0	12/16/2006 7:47:04	5.5897E+00	1.67E+00	1.794E+00	4.814E+00	PCI/SA	1.0
RA-226	BXTE	0	12/12/2006 1:11:00	PM6.2171E-01	2.7E-01	2.774E-01	8.795E-01	PCI/SA	0.839
RA-228	BXTF	0	12/13/2006 5:56:58	4.8303E-01	3.742E-01	4.146E-01	1.94E+00	PCI/SA	0.773
TH-228	9NS1	0	12/12/2006 12:37:00	1.4306E-01	8.427E-02	8.516E-02	2.452E-01	PCI/SA	0.958
TH-230	9NS1	0	12/12/2006 12:37:00	2.1414E-01	9.734E-02	9.906E-02	2.335E-01	PCI/SA	0.958
TH-232	9NS1	0	12/12/2006 12:37:00	0.0E+00	0.0E+00	4.353E-02	2.335E-01	PCI/SA	0.958
33128	9JKAHM10	J6K2203861	P-0786	FILTER	11/21/2006		10/30/2006 11:05:00 AM		
ALPHA	BAS7	0	12/16/2006 7:47:04	2.1413E+00	1.197E+00	1.223E+00	4.385E+00	PCI/SA	1.0
RA-226	BXTE	0	12/12/2006 1:32:00	PM2.6637E-01	1.132E-01	1.168E-01	3.305E-01	PCI/SA	0.978
RA-228	BXTF	0	12/13/2006 5:57:08	6.6355E-01	3.296E-01	3.49E-01	1.516E+00	PCI/SA	0.896
TH-228	9NS1	0	12/12/2006 12:37:00	1.5117E-01	1.069E-01	1.077E-01	3.709E-01	PCI/SA	0.748
TH-230	9NS1	0	12/12/2006 12:37:00	1.9314E-01	1.132E-01	1.145E-01	3.554E-01	PCI/SA	0.748
TH-232	9NS1	0	12/12/2006 12:37:00	4.8284E-02	5.398E-02	5.415E-02	2.896E-01	PCI/SA	0.748
33128	9JKAHR10	J6K2203862	P-0787	FILTER	11/21/2006		10/30/2006 11:25:00 AM		
ALPHA	BAS7	0	12/16/2006 10:35:32	7.876E+00	1.877E+00	2.092E+00	4.779E+00	PCI/SA	1.0
RA-226	BXTE	0	12/12/2006 1:26:00	PM4.8919E-01	1.674E-01	1.746E-01	4.325E-01	PCI/SA	0.952
RA-228	BXTF	0	12/13/2006 5:57:08	6.3712E-01	3.283E-01	3.484E-01	1.523E+00	PCI/SA	0.874
TH-228	9NS1	0	12/12/2006 12:37:00	2.729E-01	1.13E-01	1.155E-01	2.518E-01	PCI/SA	0.922
TH-230	9NS1	0	12/12/2006 12:37:00	8.0461E-02	7.526E-02	7.558E-02	2.961E-01	PCI/SA	0.922
TH-232	9NS1	0	12/12/2006 12:37:00	0.0E+00	0.0E+00	4.498E-02	2.413E-01	PCI/SA	0.922
33128	9JKAHT10	J6K2203863	P-0788	FILTER	11/21/2006		10/30/2006 11:40:00 AM		
ALPHA	BAS7	0	12/16/2006 10:35:32	5.387E+00	1.606E+00	1.718E+00	4.37E+00	PCI/SA	1.0
RA-226	BXTE	0	12/12/2006 1:33:00	PM8.4953E-01	2.515E-01	2.648E-01	7.072E-01	PCI/SA	0.945
RA-228	BXTF	0	12/13/2006 5:57:08	6.4491E-01	3.741E-01	3.749E-01	1.649E+00	PCI/SA	0.865
TH-228	9NS1	0	12/12/2006 12:37:00	2.2247E-01	1.147E-01	1.164E-01	3.336E-01	PCI/SA	0.794
TH-230	9NS1	0	12/12/2006 12:37:00	4.7965E-01	1.621E-01	1.676E-01	3.197E-01	PCI/SA	0.794
TH-232	9NS1	0	12/12/2006 12:37:00	5.3294E-02	5.958E-02	5.977E-02	3.197E-01	PCI/SA	0.794
33128	9JKAHV10	J6K2203864	P-0789	FILTER	11/21/2006		10/30/2006 11:10:00 AM		
ALPHA	BAS7	0	12/16/2006 10:35:32	1.011E+00	1.303E+00	1.308E+00	5.655E+00	PCI/SA	1.0
RA-226	BXTE	0	12/12/2006 1:35:00	PM7.035E-02	1.738E-01	1.739E-01	6.81E-01	PCI/SA	0.939

6332250, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 9,

**Results Inserted | ReTestInserted | Updated | NotInserted => 11 | 0 | 0 | 0.

**Diff RptDb | Qtims => .

<i>SDG or Batch</i>	<i>Rpt Db Id</i>	<i>LotSample</i>	<i>Client Id</i>	<i>Matrix</i>	<i>Received Date</i>	<i>Sample Date</i>							
<i>Isotope</i>	<i>Method</i>	<i>RTst</i>	<i>Qc</i>	<i>Analysis Date</i>	<i>Result</i>	<i>Cnt Uncert</i>	<i>Tot Uncert</i>	<i>mga</i>	<i>Units</i>	<i>Expected</i>	<i>Yield</i>	<i>Volumes</i>	
RA-228	BXTF	0		12/13/2006 5:57:08	1.188E+00	3.952E-01	4.147E-01	1.645E+00	PCI/SA	0.835	1.0E+0	2.479E-1	
TH-228	9NS1	0		12/12/2006 12:37:00	5.7836E-02	6.466E-02	6.487E-02	3.469E-01	PCI/SA	0.628	1.0E+0	3.273E-2	
TH-230	9NS1	0		12/12/2006 12:37:00	3.3251E-01	1.385E-01	1.417E-01	3.324E-01	PCI/SA	0.628	1.0E+0	3.273E-2	
TH-232	9NS1	0		12/12/2006 12:37:00	2.7709E-02	6.196E-02	6.201E-02	3.324E-01	PCI/SA	0.628	1.0E+0	3.273E-2	
33128	9JKAHW10			J6K2203865	000550	FILTER	11/21/2006		10/30/2006 11:45:00 AM				
ALPHA	BAS7	0		12/16/2006 10:35:32	3.2617E+00	1.34E+00	1.392E+00	4.353E+00	PCI/SA	1.0	1.0E+0	2.086E-2	
RA-226	BXTE	0		12/12/2006 1:53:00 PM	PM2.0095E-01	1.255E-01	1.274E-01	4.229E-01	PCI/SA	1.055	1.0E+0	2.496E-1	
RA-228	BXTF	0		12/13/2006 6:48:07	5.0342E-01	3.105E-01	3.151E-01	1.412E+00	PCI/SA	0.944	1.0E+0	2.496E-1	
TH-228	9NS1	0		12/13/2006 9:30:36	2.1523E-01	1.097E-01	1.113E-01	3.168E-01	PCI/SA	0.898	1.0E+0	3.379E-2	
TH-230	9NS1	0		12/13/2006 9:30:36	4.7394E-01	1.442E-01	1.5E-01	2.472E-01	PCI/SA	0.898	1.0E+0	3.379E-2	
TH-232	9NS1	0		12/13/2006 9:30:36	8.2424E-02	6.182E-02	6.223E-02	2.472E-01	PCI/SA	0.898	1.0E+0	3.379E-2	
33127	JKENK1AB			J6K280000250	INTRA-LAB BLANK	FILTER	11/21/2006		10/24/2006 11:55:00 AM				
ALPHA	BAS7	0	B	12/16/2006 10:35:32	1.3548E-03	1.616E-03	1.624E-03	7.043E-03	PCI/SA	1.0	1.0E+0	1.289E+1	
33127	JKENK1CS			J6K280000250	INTRA-LAB CHECK	FILTER	11/21/2006		10/24/2006 11:55:00 AM				
ALPHA	BAS7	0	S	12/17/2006 9:21:04	1.4976E-01	9.158E-03	1.983E-02	8.095E-03	PCI/SA	1.8114E-01	1.0	1.0E+0	1.276E+1

6332250, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 9,
 **Results Inserted | ReTestInserted | Updated | NotInserted => 11 | 0 | 0 | 0.
 **Diff RptDb | Qtims => .

Batch Nbr: 6332250

Alpha Beta, Alpha by GPC-Am , Results Summary Report

12/17/2006 11:26:20 AM

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYId
Alpha by GPC-Am														
Calc	S7	FILTER	JKAGW1AE	ALPHA	5.59E+00	(1.79E+00)		PCI/SA	R	1.95E+00	4.81E+00	✓	100%	
Calc	S7	FILTER	JKAG11AE	ALPHA	2.58E+00	(1.29E+00)		PCI/SA	R	1.70E+00	4.33E+00		100%	
Calc	S7	FILTER	JKAG41AE	ALPHA	4.25E+00	(1.72E+00)		PCI/SA	R	2.38E+00	5.63E+00		100%	
Calc	S7	FILTER	JKAG71AE	ALPHA	5.94E+00	(1.78E+00)		PCI/SA	R	1.74E+00	4.38E+00		100%	
Calc	S7	FILTER	JKAHM1AE	ALPHA	2.14E+00	(1.22E+00)		PCI/SA	R	1.75E+00	4.39E+00		100%	
Calc	S7	FILTER	JKAHR1AE	ALPHA	7.88E+00	(2.09E+00)		PCI/SA	R	1.94E+00	4.78E+00		100%	
Calc	S7	FILTER	JKAHT1AE	ALPHA	5.39E+00	(1.72E+00)		PCI/SA	R	1.72E+00	4.37E+00		100%	
Calc	S7	FILTER	JKAHV1AE	ALPHA	1.01E+00	(1.31E+00)	U4	PCI/SA	R	2.39E+00	5.66E+00		100%	
Calc	S7	FILTER	JKAHW1AE	ALPHA	3.26E+00	(1.39E+00)		PCI/SA	R	1.73E+00	4.35E+00		100%	
Calc	S7	FILTER	JKENK1AA	ALPHA	1.35E-03	(1.62E-03)	U4	PCI/SA	R	2.82E-03	7.04E-03	B	100%	
Calc	S7	FILTER	JKENK1AC	ALPHA	1.50E-01	(1.98E-02)		PCI/SA	R	3.31E-03	8.10E-03	S	100%	83%

P Anderson
12-18-06

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB SaOn Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol
1	Calc	S7	FILTER	*STLE	GabWoBS	JKAGW1AE	PCI/SA	10/24/06 11:55	12/16/06 07:47				1	1.00 Sa
			536403,P-0782		,J6K220385-1 v4.8.26	FILTER		00.6					0.020708 Sa	
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value
0	12/16/06 09:02	ALPHA	23	21	GPC10A	1.5	N	N	4.3326E-01	1.0000E+00	N	100%	N	
			150	500		Y	(2.968E-02)	(0.000E+00)			8%			1.0000E-00 (0.000E+00)
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlcc/MDC	StdDyMdc/LcC
12/17/06	ALPHA	R	5.589655	(1.794273)		1.11332E-01	0.256967	0.256967	1.00 Sa	100%		4.813599		
			(3.3260E-02)	(0.081398)		(0.081398)	(0.014142)					1.954428		
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB SaOn Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol
2	Calc	S7	FILTER	*STLE	GabWoBS	JKAG11AE	PCI/SA	10/24/06 12:10	12/16/06 07:47				1	1.00 Sa
			536403,P-0783		,J6K220385-2 v4.8.26	FILTER		00.5					0.020508 Sa	
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value
0	12/16/06 09:02	ALPHA	12	15	GPC10B	1.5	N	N	4.2537E-01	1.0000E+00	N	100%	N	
			150	500		Y	(2.608E-02)	(0.000E+00)			8%			1.0000E-00 (0.000E+00)
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlcc/MDC	StdDyMdc/LcC
12/17/06	ALPHA	R	2.581864	(1.291431)		5.00000E-02	0.117546	0.117546	1.00 Sa	100%		4.328629		
			(2.4358E-02)	(0.058478)		(0.058478)	(0.014142)					1.698867		
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB SaOn Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol
3	Calc	S7	FILTER	*STLE	GabWoBS	JKAG41AE	PCI/SA	10/24/06 12:30	12/16/06 07:47				1	1.00 Sa
			536403,P-0784		,J6K220385-3 v4.8.26	FILTER		00.6					0.020847 Sa	
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value
0	12/16/06 09:02	ALPHA	23	33	GPC10C	1.5	N	N	4.4395E-01	1.0000E+00	N	100%	N	
			150	500		Y	(2.865E-02)	(0.000E+00)			8%			1.0000E-00 (0.000E+00)
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BIKlcc/MDC	StdDyMdc/LcC
12/17/06	ALPHA	R	4.25054	(1.724467)		8.73335E-02	0.196717	0.196717	1.00 Sa	100%		5.626574		
			(3.3974E-02)	(0.079152)		(0.079152)	(0.014142)					2.375042		
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB SaOn Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol
4	Calc	S7	FILTER	*STLE	GabWoBS	JKAG71AE	PCI/SA	10/24/06 12:35	12/16/06 07:47				1	1.00 Sa
			536403,000547		,J6K220385-4 v4.8.26	FILTER		00.6					0.020682 Sa	
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value
0	12/16/06 09:02	ALPHA	23	17	GPC10D	1.5	N	N	4.3768E-01	1.0000E+00	N	100%	N	
			150	500		Y	(2.937E-02)	(0.000E+00)			8%			1.0000E-00 (0.000E+00)
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB SaOn Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol
RecCnt:4														RADCALC v4.8.26
														STL Richland

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(1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU

IDC - Instrument Detection Level in Conc Units, MLCG - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration

Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Batch Nbr: 6332250 Alpha Beta, Alpha by GPC-Am , Calculated Results 12/17/2006 11:26:21 AM

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,Eff,Fct	Chem Yld,EE,FctU	IDC/LcC	BkLcC/MDC	StdDvMdc/LcC				
12/17/06	ALPHA	R	5.938369 (1.783099)		1.1933E-01 (3.3019E-02)	0.272652 (0.080633)	0.272652 (0.080633)	1.00 Sa (0.014142)	100%	4.382841 1.742931								
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/16/06 09:02	ALPHA	12	18	GPC10F	1.5	N	N	4.429E-01 (2.956E-02)	1.0000E+00 (0.000E+00)	N	100% 8%	N		1.0000E+00 (0.000E+00)	4.5045E-01 48.00975		
Sq	Cac Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,Eff,Fct	Chem Yld,EE,FctU	IDC/LcC	BkLcC/MDC	StdDvMdc/LcC				
12/17/06	ALPHA	R	2.141312 (1.222987)		4.40000E-02 (2.4604E-02)	0.099034 (0.056327)	0.099034 (0.056327)	1.00 Sa (0.014142)	100%									
Sq	Status	Method Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date		Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol				
6	Calc	S7	FILTER	*STLE	GabWoBS	JKAHM1AE	PCI/SA	10/30/06 11:25	12/16/06 10:35	0.05 ,								
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/16/06 11:50	ALPHA	30	21	GPC10A	1.5	N	N	4.3390E-01 (2.973E-02)	1.0000E+00 (0.000E+00)	N	100% 8%	N		1.0000E+00 (0.000E+00)	4.5045E-01 48.016336		
Sq	Cac Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,Eff,Fct	Chem Yld,EE,FctU	IDC/LcC	BkLcC/MDC	StdDvMdc/LcC				
12/17/06	ALPHA	R	7.876006 (2.092243)		1.58000E-01 (3.7647E-02)	0.364142 (0.094865)	0.364142 (0.094865)	1.00 Sa (0.014142)	100%									
Sq	Status	Method Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date		Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol				
7	Calc	S7	FILTER	*STLE	GabWoBS	JKAHT1AE	PCI/SA	10/30/06 11:40	12/16/06 10:35	0.05 ,								
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/16/06 11:50	ALPHA	20	15	GPC10B	1.5	N	N	4.2537E-01 (2.608E-02)	1.0000E+00 (0.000E+00)	N	100% 8%	N		1.0000E+00 (0.000E+00)	4.5045E-01 49.229284		
Sq	Cac Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,Eff,Fct	Chem Yld,EE,FctU	IDC/LcC	BkLcC/MDC	StdDvMdc/LcC				
12/17/06	ALPHA	R	5.387016 (1.718162)		1.03333E-01 (3.0804E-02)	0.242928 (0.076446)	0.242928 (0.076446)	1.00 Sa (0.014142)	100%									
Sq	Status	Method Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date		Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol				
8	Calc	S7	FILTER	*STLE	GabWoBS	JKAHV1AE	PCI/SA	10/30/06 11:10	12/16/06 10:35	0.07 ,								
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn

) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 • TPU
 IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:8 RADICALC v4.8.26
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Alpha Beta, Alpha by GPC-Am , Calculated Results

STL RICHLAND

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctu	IDC/LcC	BkLcC/MDC	StdDvMdC/LcC				
12/17/06	ALPHA	R	1.010981 (1.30846)	U4	2.06667E-02 (2.6642E-02)	0.046625 (0.060296)	0.046625 (0.060296)	1.00 Sa (0.014142)	100%	N 8%	1.0000E+00 (0.000E+00)	4.5045E-01 (0.000E+00)	1.0000E+00 (0.000E+00)	4.5045E-01 (0.000E+00)				
9	Calc S7	FILTER	*STLE	GabWoBS ,J6K220386-5 v4.8.26	JKAHW1AE	PCI/SA FILTER	10/30/06 11:45 00.7	AnalysisDate/PptWt 12/16/06 10:35	Sep1/Sep2 Date 12/16/06 10:35	QC/Tracer Vial 1	100%	5.655261 2.387151	1	1.00 Sa 0.020857 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/ValAdj	Decay	Abn
0	12/16/06 11:50	ALPHA	15	17	GPC10D	1.5	N	N	4.3701E-01 (2.932E-02)	1.0000E+00 (0.000E+00)	N	100%	N 8%	1.0000E+00 (0.000E+00)	4.5045E-01 (0.000E+00)	1.0000E+00 (0.000E+00)	4.5045E-01 (0.000E+00)	
12/17/06	ALPHA	R	3.261738 (1.392493)	U4	6.80000E-02 (2.7105E-02)	0.151027 (0.063997)	0.151027 (0.063997)	1.00 Sa (0.014142)	100%	Yield,EnFct	Chem Yld,EFctu	IDC/LcC	BkLcC/MDC	StdDvMdC/LcC				
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol			
10	Calc S7	FILTER	*STLE	GabWoBS ,J6K280000-250	JKENK1AA	PCI/SA FILTER	10/24/06 11:55 00.0	AnalysisDate/PptWt 12/16/06 10:35	Sep1/Sep2 Date 12/16/06 10:35	QC/Tracer Vial 1	100%	4.352666 1.730931	1	1.00 Sa 12.89 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/ValAdj	Decay	Abn
0	12/16/06 11:50	ALPHA	8	18	GPC10F	1.5	N	N	4.4710E-01 (2.975E-02)	1.0000E+00 (0.000E+00)	N	100%	N 8%	1.0000E+00 (0.000E+00)	4.5045E-01 (0.07758)	1.0000E+00 (0.000E+00)	4.5045E-01 (0.07758)	
12/17/06	ALPHA	R	0.001355 (0.001624)	U4	1.73333E-02 (2.0677E-02)	0.038768 (0.046423)	0.038768 (0.046423)	1.00 Sa (0.014142)	100%	Yield,EnFct	Chem Yld,EFctu	IDC/LcC	BkLcC/MDC	StdDvMdC/LcC				
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol			
11	Calc S7	FILTER	*STLE	GabWoBS ,J6K280000-250	JKENK1AC	PCI/SA FILTER	10/24/06 11:55 00.5	AnalysisDate/PptWt 12/17/06 09:21	Sep1/Sep2 Date 12/17/06 09:21	ASC0423	1	1.00 Sa 12.76 Sa	1	1.00 Sa 12.76 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/ValAdj	Decay	Abn
0	12/17/06 10:36	ALPHA	283	23	GPC10A	1.5	N	N	4.3390E-01 (2.973E-02)	1.0000E+00 (0.000E+00)	N	100%	N 8%	1.0000E+00 (0.000E+00)	4.5045E-01 (0.07837)	1.0000E+00 (0.000E+00)	4.5045E-01 (0.07837)	
12/17/06	ALPHA	R	0.149756 (0.01983)	U4	1.84067E+00 (1.1256E-01)	4.242174 (0.516661)	4.242174 (0.516661)	1.00 Sa (0.014142)	100%	Yield,EnFct	Chem Yld,EFctu	IDC/LcC	BkLcC/MDC	StdDvMdC/LcC				

- (1) - (1s Uncertainties), Q - Qualifier, U - Result is Less Than Lc = 1.645 * TPU
- (2) - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count

Page 3
Intestable Concentration

RecCnt:11

RADCALC v4.8.26

UST Number: JKAGW1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A

File: [quad10.sample.A]JKAGW1AE.112

Dish Size: 15

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.A_15;4419

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	16-DEC-2006 09:02:04.98

Bkg File: [quad10.bkgrnd]2006-12-16_0533.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00021	0500	0.04	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAG11AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B

Dish Size: 15

File: [quad10.sample.B]JKAG11AE.112

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.B_15;4414

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00012	00000	0150	00000	1000	16-DEC-2006 09:02:04.98

Bkg File: [quad10.bkgrnd]2006-12-16_0533.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00015	0500	0.03	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAG41AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C

Dish Size: 15

File: [quad10.sample.C]JKAG41AE.112

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.C_15;4425

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	16-DEC-2006 09:02:04.98

Bkg File: [quad10.bkgrnd]2006-12-16_0533.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00033	0500	0.07	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAG71AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D

Dish Size: 15

File: [quad10.sample.D]JKAG71AE.112

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.D_15;4418

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00023	00000	0150	00000	1000	16-DEC-2006 09:02:04.98

Bkg File: [quad10.bkgrnd]2006-12-16_0533.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00017	0500	0.03	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAHM1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-F

Dish Size: 15

File: [quad10.sample.F]JKAHM1AE.112

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.F_15;4410

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00012	00000	0150	00000	1000	16-DEC-2006 09:02:04.98

Bkg File: [quad10.bkgrnd]2006-12-16_0533.F_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAHR1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A

File: [quad10.sample.A]JKAHR1AE.112

Dish Size: 15

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.A_15;4419

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00030	00000	0150	00000	1000	16-DEC-2006 11:50:32.87

Bkg File: [quad10.bkgrnd]2006-12-16_0533.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00021	0500	0.04	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAHT1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-B

Dish Size: 15

File: [quad10.sample.B]JKAHT1AE.112

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.B_15;4414

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00020	00000	0150	00000	1000	16-DEC-2006 11:50:32.87

Bkg File: [quad10.bkgrnd]2006-12-16_0533.B_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00015	0500	0.03	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAHV1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-C

File: [quad10.sample.C]JKAHV1AE.112

Dish Size: 15

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.C_15;4425

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00013	00000	0150	00000	1000	16-DEC-2006 11:50:32.87

Bkg File: [quad10.bkgrnd]2006-12-16_0533.C_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00033	0500	0.07	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKAWH1AE Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-D

Dish Size: 15

File: [quad10.sample.D]JKAWH1AE.112

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.D_15;4418

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00015	00000	0150	00000	1000	16-DEC-2006 11:50:32.87

Bkg File: [quad10.bkgrnd]2006-12-16_0533.D_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00017	0500	0.03	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKENK1AA Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-F

Dish Size: 15

File: [quad10.sample.F]JKENK1AA.112

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.F_15;4410

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00008	00000	0150	00000	1000	16-DEC-2006 11:50:32.87

Bkg File: [quad10.bkgrnd]2006-12-16_0533.F_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00018	0500	0.04	00000	1000	16-DEC-2006 05:33:04.11

UST Number: JKENK1AC Isotope: 112 (QREPORT Rev 11-OCT-98)

Detector: 10-A

Dish Size: 15

File: [quad10.sample.A]JKENK1AC.112

Bkg File: \$DISK1:[QUAD10.BKGRND]CURRENT.A_15;4420

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00283	00000	0150	00000	1000	17-DEC-2006 10:36:04.70

Bkg File: [quad10.bkgrnd]2006-12-16_2026.A_15 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00023	0500	0.05	00000	1000	16-DEC-2006 20:26:53.75

12/13/2006 1:01:48 PM

Sample Preparation/Analysis

BA Gross Alpha PrpRC5016/5014

S7 Gross Alpha by GPC using Am-241 curve
01 STANDARD TEST SET

Balance Id:1120373922

Pipet #: _____

AnalyDueDate: 12/18/2006

Sep1 DT/Tm Tech:

SEQ Batch, Test: None

pCi/sample

Sep2 DT/Tm Tech:

Prep Tech: ,Woodt

Work Order Lot, Sample Date Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
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JRENK1AA-BLK:

Uncert Level (#s) :: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Uncert Level (#s) :: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

JRENK1AC-LCS:

Uncert Level (#s) :: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

Approved By _____ Date: _____

Prep Tech: ,Woodt

Sep2 DT/Tm Tech:

Prep Tech: ,Woodt

Sep1 DT/Tm Tech:

Prep Tech: ,Woodt

Sep2 DT/Tm Tech:

Prep Tech: ,Woodt

Sep1 DT/Tm Tech:

Prep Tech: ,Woodt

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Sep1 DT/Tm Tech:

Prep Tech: ,Woodt

ISV - Insufficient Volume for Analysis

STL Richland Richland Wa.

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2

Page 3

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WO Cnt: 11

ICOC v4.8.26

RADIUM 228

SAMPLE AND QC DATA

Lot No., Due Date: J6K220385,J6K220386; 12/19/2006
Client, Site: 536403; AIR MONITORING Yerington Mine
QC Batch No., Method Test: 6332254; RRA228 Ra-228 by GPC
SDG, Matrix: 33127,33128; FILTER

1.0 COC

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?

Yes ✓ No N/A

2.0 QC Batch

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?

Yes ✓ No N/A

2.2 Are the QC appropriate for the analysis included in the batch?

Yes ✓ No N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?

Yes ✓ No N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?

Yes ✓ No N/A

3.0 QC & Samples

3.1 Is the blank results, yield, and MDA within contract limits?

Yes ✓ No N/A

3.2 Is the LCS result, yield, and MDA within contract limits?

Yes ✓ No N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?

Yes ✓ No N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?

Yes ✓ No N/A

3.5 Are the sample yields and MDAs within contract limits?

Yes ✓ No N/A

4.0 Raw Data

4.1 Were results calculated in the correct units?

Yes ✓ No N/A

4.2 Were analysis volumes entered correctly?

Yes ✓ No N/A

4.3 Were Yields entered correctly?

Yes ✓ No N/A

4.4 Were spectra reviewed/meet contractual requirements?

Yes ✓ No N/A

4.5 Were raw counts reviewed for anomalies?

Yes ✓ No N/A

5.0 Other

5.1 Are all nonconformances included and noted?

Yes ✓ No N/A

5.2 Are all required forms filled out?

Yes ✓ No N/A

5.3 Was the correct methodology used?

Yes ✓ No N/A

5.4 Was transcription checked?

Yes ✓ No N/A

5.5 Were all calculations checked at a minimum frequency?

Yes ✓ No N/A

5.6 Are worksheet entries complete and correct?

Yes ✓ No N/A

6.0 Comments on any No response:

First Level Review Pam Anderson

Date 12-14-06



STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number:

6332254

Review Item	Yes (✓)	No (✗)	N/A (✗)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result \leq the Contract Detection Limit?			
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity \leq the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?			✓
C. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response:

Second Level Review:

Date: 12-14-06

12/1/2006 12:08:32 PM
 STL 536403, Brown and Caldwell
 RICHLAND AnalyDueDate: 12/18/2006 SEQ Batch, Test: 6332252, BXTE

Sample Preparation/Analysis

Brown & BX Ra-226/228 PpRC5016, SepRC5005
 TF Radium-228 by GPC
 01 STANDARD TEST SET

FILTER

pCi/samp

PM, Quote: SA, 63174

JKAGW-1-AD

SAMP

Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 JKAGW-1-AD J6K220385-1-SAMP	0.833sa	504.03sa	150.11g,in	0.2481g	RATA24851 11/22/06	0,8 393	in 31,7 3x50	-21 -744	12/12/0600	

10/24/2006 11:55	AmtRec: FILTER	#Containers: 1	RATA24852 11/22/06	1,0 331	31,6	2B	1744	12/12/0600
2 JKAG1-1-AD J6K220385-2-SAMP	0.833sa	508.95sa	150.07g,in	0.2456g				

10/24/2006 12:10	AmtRec: FILTER	#Containers: 1	RATA24853 11/22/06	1,0 368	31,0	2C	1744	12/12/0600
3 JKAG4-1-AD J6K220385-3-SAMP	0.833sa	501.07sa	150.04g,in	0.2494g				

10/24/2006 12:30	AmtRec: FILTER	#Containers: 1	RATA24854 11/22/06	1,0 482	31,1	2D	1744	12/12/0600
4 JKAG7-1-AD J6K220385-4-SAMP	0.833sa	504.67sa	150.64g,in	0.2486g				

10/24/2006 12:35	AmtRec: FILTER	#Containers: 1						

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

Alpha:	Beta:

WO Cnt: 4
 Prep_SamplePrep v4.8.26

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2
 Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

STL		Sample Preparation/Analysis										Balance Id:11,11,11,11,11,1120373922,11,	
536403, Brown and Caldwell Caldwell	Brown &	BX Ra-226/228 PPRC5016, SepRC5005		Pipet #: _____									
AnalyDueDate: 12/18/2006		TF Radium-228 by GPC		Sep1 DT/Tm Tech:									
Batch: 6332254	FILTER	pCi/samp		PM, Quote: SA , 63174		Prep Tech: WoodT,HarrisonJ		Sep2 DT/Tm Tech:					
Work Order, Lot, Sample Date	Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:			
5 JKAHM-1-AD J6K220386-1-SAMP	0.833sa	500.21sa	150.35g.in	0.2504g	RATA24855 11/22/06	0.9785	311	412	1730	12/12/06			
10/30/2006 11:05													
6 JKAHR-1-AD J6K220386-2-SAMP	0.833sa	501.57sa	150.19g.in	0.2494g	RATA24856 11/22/06	0.9516	31.6	313	1730	12/12/06			
10/30/2006 11:25													
7 JKAHT-1-AD J6K220386-3-SAMP	0.833sa	513.01sa	150.16g.in	0.2438g	RATA24857 11/22/06	0.9446	31.5	314	1730	12/12/06			
10/30/2006 11:40													
8 JKAHV-1-AD J6K220386-4-SAMP	0.833sa	504.43sa	150.09g.in	0.2479g	RATA24858 11/22/06	0.9389	30.6	305	173	12/12/06			
10/30/2006 11:50													
STL Richland Richland Wa.	Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added	ISV - Insufficient Volume for Analysis										WO Cnt: 8	Prep_SamplePrep v4.8.26

12/14/2006 8:24:09 AM

ICOC Fraction Transfer/Status Report

ByDate: 12/14/2005, 12/19/2006, Batch: '6332254', User: *ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
6332254					
AC		CalcC	WoodT	11/30/2006 8:54:22	
SC		wagarr	IsBatched	11/28/2006 10:37:01 AM	ICOC_RADCALC v4.8.24
SC		WoodT	InPrep	11/30/2006 8:54:22 AM	RICH-RC-5016 REVISION 5
SC		LongA	Sep1C	12/4/2006 1:21:00 PM	/RICH-RC-5005 REVISION 5
SC		LongA	Sep2C	12/12/2006 12:16:08 PM	RICH-RC-5005 REVISION 4
SC		DAWKINSO	InCnt1	12/12/2006 5:16:09 PM	RICH-RD-0003 REVISION 4
SC		BlackCL	CalcC	12/13/2006 8:25:00 AM	RICH-RD-0003 REVISION 4
AC		LongA		12/4/2006 1:21:00 PM	
AC		LongA		12/12/2006 12:16:08	
AC		DAWKINSO		12/12/2006 5:16:09	
AC		BlackCL		12/13/2006 8:25:00	

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Page 1

Grp Rec Cnt:5

ICOCPARTS v4.8.26

STL RICHLAND

159

12/14/2006 8:24:08 AM

Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id Method	RTst	Qc	LotSample Analysis Date	Client Id Result	Matrix	Received Date		Sample Date		Expected Yield	Volumes		
							Cnt	Uncert	Tot Uncert	Mga	Units			
33127	9JKAG110			J6K2203852	P-0783	FILTER	11/21/2006				10/24/2006 12:10:00 PM			
	RA-228	BXTF	0	12/13/2006 5:56:58	-9.3275E-02	3.353E-01	3.353E-01	1.728E+00	PCI/SA		0.949	1.0E+0	2.456E-1	
33127	9JKAG410			J6K2203853	P-0784	FILTER	11/21/2006				10/24/2006 12:30:00 PM			
	RA-228	BXTF	0	12/13/2006 5:56:58	1.4597E+00	3.839E-01	4.165E-01	1.568E+00	PCI/SA		0.933	1.0E+0	2.494E-1	
33127	9JKAG710			J6K2203854	000547	FILTER	11/21/2006				10/24/2006 12:35:00 PM			
	RA-228	BXTF	0	12/13/2006 5:56:58	-2.4878E-01	3.255E-01	3.255E-01	1.726E+00	PCI/SA		0.948	1.0E+0	2.486E-1	
33127	9JKAGW10			J6K2203851	P-0782	FILTER	11/21/2006				10/24/2006 11:55:00 AM			
	RA-228	BXTF	0	12/13/2006 5:56:58	4.8303E-01	3.742E-01	4.146E-01	1.94E+00	PCI/SA		0.773	1.0E+0	2.481E-1	
33128	9JKAHM10			J6K2203861	P-0786	FILTER	11/21/2006				10/30/2006 11:05:00 AM			
	RA-228	BXTF	0	12/13/2006 5:57:08	6.6355E-01	3.296E-01	3.49E-01	1.516E+00	PCI/SA		0.896	1.0E+0	2.504E-1	
33128	9JKAHR10			J6K2203862	P-0787	FILTER	11/21/2006				10/30/2006 11:25:00 AM			
	RA-228	BXTF	0	12/13/2006 5:57:08	6.3712E-01	3.283E-01	3.484E-01	1.523E+00	PCI/SA		0.874	1.0E+0	2.494E-1	
33128	9JKAHT10			J6K2203863	P-0788	FILTER	11/21/2006				10/30/2006 11:40:00 AM			
	RA-228	BXTF	0	12/13/2006 5:57:08	6.4491E-01	3.741E-01	3.749E-01	1.649E+00	PCI/SA		0.865	1.0E+0	2.438E-1	
33128	9JKAHV10			J6K2203864	P-0789	FILTER	11/21/2006				10/30/2006 11:10:00 AM			
	RA-228	BXTF	0	12/13/2006 5:57:08	1.188E+00	3.952E-01	4.147E-01	1.645E+00	PCI/SA		0.835	1.0E+0	2.479E-1	
33128	9JKAHW10			J6K2203865	000550	FILTER	11/21/2006				10/30/2006 11:45:00 AM			
	RA-228	BXTF	0	12/13/2006 6:48:07	5.0342E-01	3.105E-01	3.151E-01	1.412E+00	PCI/SA		0.944	1.0E+0	2.496E-1	
33127	JKENQ1AB			J6K280000254	INTRA-LAB BLANK	FILTER	11/21/2006				10/30/2006 11:05:00 AM			
	RA-228	BXTF	0	B	12/13/2006 6:48:07	1.4066E-03	5.433E-04	5.818E-04	2.425E-03	PCI/SA		0.935	1.0E+0	1.51E+2
33127	JKENQ1CS			J6K280000254	INTRA-LAB CHECK	FILTER	11/21/2006				10/30/2006 11:05:00 AM			
	RA-228	BXTF	0	S	12/13/2006 6:48:07	2.5466E-02	1.434E-03	2.051E-03	2.509E-03	PCI/SA	3.3202E-02	0.941	1.0E+0	1.502E+2

6332254, **Samples Inserted | Updated | NotUpdated => 11 | 0 | 0,

**Results Inserted | ReTestInserted | Updated | NotInserted => 11 | 0 | 0 | 0.

**Diff RptDb | Qtims => .

Summary Report

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYId	
Ra-228 by GPC			Ra-226/Ra-228 Deem With Out Blk Subt.												
Calc	TF	FILTER	JKAGW1AD	RA-228	1.09E+00	(7.31E-01)	U4	PCI/SA	R	1.29E+00	3.02E+00	/ next	77%		
Calc	TF	FILTER	JKAGW1AD	RA-228	8.42E-01	(7.65E-01)	U4	PCI/SA	R	1.43E+00	3.35E+00		77%		
Calc	TF	FILTER	JKAGW1AD	RA-228	-4.80E-01	(6.54E-01)	U4	PCI/SA	R	1.59E+00	3.72E+00		77%		
Calc	TF	FILTER	JKAGW1AD	RA-228	4.83E-01	(4.15E-01)	U4	PCI/SA	A	8.28E-01	1.94E+00		77%		
Calc	TF	FILTER	JKAGW1AD	RA-228	2.10E+00	(2.98E+00)	U4	PCI/SA	R	5.92E+00	1.38E+01		77%		
Calc	TF	FILTER	JKAG11AD	RA-228	5.19E-01	(5.95E-01)	U4	PCI/SA	R	1.17E+00	2.69E+00		95%		
Calc	TF	FILTER	JKAG11AD	RA-228	0.00E+00	(5.91E-01)	U4	PCI/SA	R	1.30E+00	2.98E+00		95%		
Calc	TF	FILTER	JKAG11AD	RA-228	-7.99E-01	(5.56E-01)	U4	PCI/SA	R	1.44E+00	3.31E+00		95%		
Calc	TF	FILTER	JKAG11AD	RA-228	-9.33E-02	(3.35E-01)	U4	PCI/SA	A	7.51E-01	1.73E+00		95%		
Calc	TF	FILTER	JKAG11AD	RA-228	-1.43E-01	(2.28E+00)	U4	PCI/SA	R	5.03E+00	1.16E+01		95%		
Calc	TF	FILTER	JKAG41AD	RA-228	3.33E+00	(8.81E-01)		PCI/SA	R	1.04E+00	2.44E+00		93%		
Calc	TF	FILTER	JKAG41AD	RA-228	5.76E-01	(6.04E-01)	U4	PCI/SA	R	1.15E+00	2.71E+00		93%		
Calc	TF	FILTER	JKAG41AD	RA-228	4.74E-01	(6.48E-01)	U4	PCI/SA	R	1.28E+00	3.00E+00		93%		
Calc	TF	FILTER	JKAG41AD	RA-228	1.46E+00	(4.17E-01)		PCI/SA	A	6.68E-01	1.57E+00		93%		
Calc	TF	FILTER	JKAG41AD	RA-228	3.00E-01	(2.46E+00)	U4	PCI/SA	R	5.31E+00	1.22E+01		93%		
Calc	TF	FILTER	JKAG71AD	RA-228	1.19E+00	(6.72E-01)		PCI/SA	R	1.17E+00	2.68E+00		95%		
Calc	TF	FILTER	JKAG71AD	RA-228	-9.92E-01	(4.64E-01)	U4	PCI/SA	R	1.29E+00	2.98E+00		95%		
Calc	TF	FILTER	JKAG71AD	RA-228	-9.41E-01	(5.36E-01)	U4	PCI/SA	R	1.44E+00	3.31E+00		95%		
Calc	TF	FILTER	JKAG71AD	RA-228	-2.49E-01	(3.26E-01)	U4	PCI/SA	A	7.50E-01	1.73E+00		95%		
Calc	TF	FILTER	JKAG71AD	RA-228	-2.89E-01	(2.04E+00)	U4	PCI/SA	R	4.56E+00	1.07E+01		95%		
Calc	TF	FILTER	JKAHM1AD	RA-228	1.39E+00	(6.52E-01)		PCI/SA	R	1.02E+00	2.38E+00		90%		
Calc	TF	FILTER	JKAHM1AD	RA-228	1.39E-01	(5.30E-01)	U4	PCI/SA	R	1.12E+00	2.62E+00		90%		
Calc	TF	FILTER	JKAHM1AD	RA-228	4.59E-01	(6.24E-01)	U4	PCI/SA	R	1.23E+00	2.88E+00		90%		
Calc	TF	FILTER	JKAHM1AD	RA-228	6.64E-01	(3.49E-01)		PCI/SA	A	6.49E-01	1.52E+00		90%		
Calc	TF	FILTER	JKAHM1AD	RA-228	3.84E+00	(2.76E+00)	U4	PCI/SA	R	4.98E+00	1.16E+01		90%		
Calc	TF	FILTER	JKAHR1AD	RA-228	1.15E+00	(6.25E-01)		PCI/SA	R	1.03E+00	2.39E+00		87%		
Calc	TF	FILTER	JKAHR1AD	RA-228	5.79E-01	(5.93E-01)	U4	PCI/SA	R	1.13E+00	2.63E+00		87%		
Calc	TF	FILTER	JKAHR1AD	RA-228	1.87E-01	(5.92E-01)	U4	PCI/SA	R	1.24E+00	2.89E+00		87%		
Calc	TF	FILTER	JKAHR1AD	RA-228	6.37E-01	(3.48E-01)		PCI/SA	A	6.55E-01	1.52E+00		87%		
Calc	TF	FILTER	JKAHR1AD	RA-228	9.53E-01	(2.51E+00)	U4	PCI/SA	R	5.23E+00	1.22E+01		87%		
Calc	TF	FILTER	JKAHT1AD	RA-228	5.32E-01	(5.79E-01)	U4	PCI/SA	R	1.12E+00	2.59E+00		86%		
Calc	TF	FILTER	JKAHT1AD	RA-228	4.39E-01	(6.17E-01)	U4	PCI/SA	R	1.23E+00	2.85E+00		86%		
Calc	TF	FILTER	JKAHT1AD	RA-228	9.64E-01	(7.42E-01)	U4	PCI/SA	R	1.35E+00	3.13E+00		86%		
Calc	TF	FILTER	JKAHT1AD	RA-228	6.45E-01	(3.75E-01)		PCI/SA	A	7.10E-01	1.65E+00		86%		
Calc	TF	FILTER	JKAHT1AD	RA-228	-1.05E+00	(2.39E+00)	U4	PCI/SA	R	5.54E+00	1.28E+01		86%		
Calc	TF	FILTER	JKAHV1AD	RA-228	1.24E+00	(6.71E-01)		PCI/SA	R	1.11E+00	2.58E+00		84%		
Calc	TF	FILTER	JKAHV1AD	RA-228	1.80E+00	(7.96E-01)		PCI/SA	R	1.22E+00	2.84E+00		84%		
Calc	TF	FILTER	JKAHV1AD	RA-228	5.25E-01	(6.82E-01)	U4	PCI/SA	R	1.34E+00	3.12E+00		84%		

(0 - (1s Uncertainties)
 IDC - Instrument Detection Level in Conc Units
 MLcC- Method Decision Level in Conc Units
 MDC - Minimum Detectable Concentration
 *Std - Lc, MDC using StdDev for Set of Blanks

Q - Qualifier, U is Less Than Lc = 1.645*TPU
 All Results Displayed to Three Digits Regardless of Significants
 Date/Time - mm/dd/yy hh:mm, 24hr Time

Alpha Beta, Ra-228 by GPC , Results
Summary Report

12/13/2006 8:24:51 AM

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld
Calc	TF	FILTER	JKAHV1AD	RA-228	1.19E+00	(4.15E-01)	PCI/SA	A	7.07E-01	1.64E+00		84%		
Calc	TF	FILTER	JKAHV1AD	RA-228	9.40E-01	(2.80E+00)	U4 PCI/SA	R	5.87E+00	1.36E+01		84%		
Calc	TF	FILTER	JKAHW1AD	RA-228	4.22E-01	(4.89E-01)	U4 PCI/SA	R	9.52E-01	2.22E+00		94%		
Calc	TF	FILTER	JKAHW1AD	RA-228	7.19E-01	(5.70E-01)	U4 PCI/SA	R	1.05E+00	2.44E+00		94%		
Calc	TF	FILTER	JKAHW1AD	RA-228	3.69E-01	(5.73E-01)	U4 PCI/SA	R	1.15E+00	2.68E+00		94%		
Calc	TF	FILTER	JKAHW1AD	RA-228	5.03E-01	(3.15E-01)	U4 PCI/SA	A	6.06E-01	1.41E+00		94%		
Calc	TF	FILTER	JKAHW1AD	RA-228	7.82E+00	(3.36E+00)	PCI/SA	R	5.22E+00	1.22E+01		94%		
Calc	TF	FILTER	JKENQ1AA	RA-228	1.89E-03	(9.83E-04)	PCI/SA	R	1.64E-03	3.81E-03	B	93%		
Calc	TF	FILTER	JKENQ1AA	RA-228	3.17E-03	(1.21E-03)	PCI/SA	R	1.80E-03	4.19E-03	B	93%		
Calc	TF	FILTER	JKENQ1AA	RA-228	-8.41E-04	(7.86E-04)	U4 PCI/SA	R	1.98E-03	4.60E-03	B	93%		
Calc	TF	FILTER	JKENQ1AA	RA-228	1.41E-03	(5.82E-04)	PCI/SA	A	1.04E-03	2.43E-03	B	93%		
Calc	TF	FILTER	JKENQ1AA	RA-228	4.86E-03	(4.68E-03)	U4 PCI/SA	R	8.89E-03	2.07E-02	B	93%		
Calc	TF	FILTER	JKENQ1AC	RA-228	2.69E-02	(3.61E-03)	PCI/SA	R	1.71E-03	3.94E-03	S	94%	81%	
Calc	TF	FILTER	JKENQ1AC	RA-228	2.40E-02	(3.40E-03)	PCI/SA	R	1.88E-03	4.33E-03	S	94%	72%	
Calc	TF	FILTER	JKENQ1AC	RA-228	2.55E-02	(3.64E-03)	PCI/SA	R	2.06E-03	4.76E-03	S	94%	77%	
Calc	TF	FILTER	JKENQ1AC	RA-228	2.55E-02	(2.05E-03)	PCI/SA	A	1.09E-03	2.51E-03	S	94%	77%	
Calc	TF	FILTER	JKENQ1AC	RA-228	1.95E-02	(6.45E-03)	PCI/SA	R	9.11E-03	2.11E-02	S	94%	59%	

P Anderson
12-13-06

Detailed Report

12/13/2006 8:24:52 AM

Sq	Status	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol					
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency 1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/12/06 15:54	RA-228	18	91	GPC2A	1	N	N	4.2610E-01	1.0000E+00	N	77%	N	1.4688E+00	4.5045E-01	1.0136E+00		
1	12/12/06 16:49	RA-228	50	400		Y	(1.179E-02)	(0.000E+00)	6%					(0.000E+00)	4.030898			
2	12/12/06 17:44	RA-228	16	91	GPC2A	1	N	N	4.2610E-01	1.0000E+00	N	77%	N	1.6301E+00	4.5045E-01	1.0136E+00		
3	12/13/06 05:56	RA-228	50	400		Y	(1.179E-02)	(0.000E+00)	6%					(0.000E+00)	4.030898			
Sq	Calc Date	Parameter	Avg	SaAct	Q	Net Cnt Rt	Dpm Cnt Blk	Dpm Wo Blk	Dpm-Blk	Vol Used		Yield,EmFct	Chem Yld,EFctU	IDC/LCC	StdDvMdc/MDC	StdDvMdc/Lcc		
0	12/13/06	RA-228	R	1.086898	U4	1.32500E-01	0.590551	0.590551	1.00 SA	77%				3.017553				
				(0.731033)	(8.8141E-02)	(0.396009)	(0.396009)	(0.396009)	(0.014142)					1.28724				
1	12/13/06	RA-228	R	0.84207	U4	9.25000E-02	0.457527	0.457527	1.00 SA	77%				3.348795				
2	12/13/06	RA-228	R	-0.479881	U4	-4.75000E-02	-0.260737	-0.260737	1.00 SA	77%				1.428542				
3	12/13/06	RA-228	A	0.483029	U4	5.91667E-02	0.262447	0.262447	1.00 SA	77%				3.716398				
4	12/13/06	RA-228	R	2.100764	U4	5.75000E-02	1.141421	1.141421	1.00 SA	77%				1.585355				
5	12/13/06	RA-228	R	(2.982134)	(8.1279E-02)	(1.619215)	(1.619215)	(1.619215)	(0.014142)					1.940425				
														0.827754				
Sq	Status	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol					
2	Calc	TF	FILTER	*STLE	Ra228WoBS	JKAG11AD	PCI/SA	10/24/06 12:10	12/13/06 05:56	12/04/06 13:00	RATA24852	1	1.00 SA					
					,J6K220385-2 v4.8.26		FILTER		31.6 ,	12/12/06 12:05	RATA24852 Alq	103%	0.24562 SA					
0	12/12/06 15:54	RA-228	19	120	GPC2B	1	N	N	4.4376E-01	1.0000E+00	N	95%	N	1.4688E+00	4.5045E-01	1.0136E+00		
1	12/12/06 16:49	RA-228	50	400		Y	(1.047E-02)	(0.000E+00)	8%					(0.000E+00)	4.071329			
2	12/12/06 17:44	RA-228	15	120	GPC2B	1	N	N	4.4376E-01	1.0000E+00	N	95%	N	1.6301E+00	4.5045E-01	1.0136E+00		
														(0.000E+00)	4.071329			
														1.8090E+00	4.5045E-01	1.0136E+00		
														(0.000E+00)	4.071329			

0 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU

IDC - Instrument Detection Level in Conc Units, MLCC - Minimum Detectable Concentration

RADCALC v4.8.26

STL Richland

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SR-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Alpha Beta, Ra-228 by GPC , Calculated Results														12/13/2006 8:24:52 AM			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,Effct	Chem Yld,EFctU	DC/LcC	BkLcC/MDC	StdDvMdc/Lcc			
3	12/13/06 05:56	RA-228	14	114	GPC3B	1	N	N	4.9156E-01 (5.491E-02)	1.0000E+00 (0.000E+00)	N	95% 8%	N	7.1902E+00 (0.000E+00)	4.5045E-01 4.071329		
Sq	Cnt Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,Effct	Chem Yld,EFctU	DC/LcC	BkLcC/MDC	StdDvMdc/Lcc			
12/13/06	RA-228	R	0.518881 (0.594641)	U4	8.0000E-02 (9.1378E-02)	0.27902 (0.319554)	0.27902 (0.319554)	1.00 SA (0.014142)	95%	2.686686 1.168333							
12/13/06	RA-228	R	0.00E00 (0.591147)	U4	0.0000E+00 (8.2150E-02)	0.00E00 (0.318003)	0.00E00 (0.318003)	1.00 SA (0.014142)	95%	2.981607 1.296583							
12/13/06	RA-228	R	-0.798505 (0.555897)	U4	-1.0000E-01 (6.8920E-02)	-0.429549 (0.298206)	-0.429549 (0.298206)	1.00 SA (0.014142)	95%	3.308903 1.438911							
12/13/06	RA-228	A	-0.093275 (0.33534)	U4	-6.66667E-03 (4.6963E-02)	-0.050176 (0.180175)	-0.050176 (0.180175)	1.00 SA (0.008165)	95%	1.727662 0.751282							
12/13/06	RA-228	R	-0.143255 (2.276457)	U4	-5.0000E-03 (7.9451E-02)	-0.077063 (1.224595)	-0.077063 (1.224595)	1.00 SA (0.014142)	95%	11.611323 5.032207							
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol			
3	Calc	TF	FILTER	*STLE	Ra228WoBS ,JkR2203985-3.v4.8.26	JkAG41AD FILTER	PCI/SA	10/24/06 12:30	12/13/06 05:56	12/04/06 13:00	RATA24853	1	1.00 SA				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay
0	12/12/06 15:54	RA-228	36	89	GPC2C	1	N	N	4.3040E-01 (9.361E-03)	1.0000E+00 (0.000E+00)	N	93% 7%	N		1.4688E+00 (0.000E+00)	4.5045E-01 4.009095	1.0136E+00
1	12/12/06 16:49	RA-228	15	89	GPC2C	1	N	N	4.3040E-01 (9.361E-03)	1.0000E+00 (0.000E+00)	N	93% 7%	N		1.6301E+00 (0.000E+00)	4.5045E-01 4.009095	1.0136E+00
2	12/12/06 17:44	RA-228	14	89	GPC2C	1	N	N	4.3040E-01 (9.361E-03)	1.0000E+00 (0.000E+00)	N	93% 7%	N		1.8090E+00 (0.000E+00)	4.5045E-01 4.009095	1.0136E+00
3	12/13/06 05:56	RA-228	15	116	GPC3C	1	N	N	4.7006E-01 (4.623E-02)	1.0000E+00 (0.000E+00)	N	93% 7%	N		7.1902E+00 (0.000E+00)	4.5045E-01 4.009095	1.0136E+00
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,Effct	Chem Yld,EFctU	DC/LcC	BkLcC/MDC	StdDvMdc/Lcc			
12/13/06	RA-228	R	3.329553 (0.880922)	U4	4.97500E-01 (1.2230E-01)	1.818919 (0.471871)	1.818919 (0.471871)	1.00 SA (0.014142)	93%	2.43873 1.038613							
12/13/06	RA-228	R	0.57561 (0.604019)	U4	7.75000E-02 (8.0971E-02)	0.314453 (0.329568)	0.314453 (0.329568)	1.00 SA (0.014142)	93%	2.706433 1.152623							
12/13/06	RA-228	R	0.473945 (0.648383)	U4	5.75000E-02 (7.8462E-02)	0.258914 (0.353953)	0.258914 (0.353953)	1.00 SA (0.014142)	93%	3.003523 1.279149							
12/13/06	RA-228	A	1.459703 (0.416502)	U4	2.10833E-01 (5.5446E-02)	0.797428 (0.225231)	0.797428 (0.225231)	1.00 SA (0.008165)	93%	1.568215 0.667876							
12/13/06	RA-228	R	0.299972 (2.460294)	U4	1.00000E-02 (8.2006E-02)	0.163873 (1.34402)	0.163873 (1.34402)	1.00 SA (0.014142)	93%	12.248845 5.314655							

0 - (1's Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
 IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

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RADCALC v4.8.26
STL Richland

Alpha Beta, Ra-228 by GPC , Calculated Results

12/13/2006 8:24:53 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol		
4	Calc	TF	FILTER	*STLE	Ra228WoBS	JKAG71AD	PCI/SA	10/24/06 12:35	12/13/06 05:56	12/04/06 13:00	RATA24854	1		1.00	SA			
									31.1	12/12/06 12:05	RATA24854 Alq	105%	,	0.248644	SA			
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	
0	12/12/06 15:54	RA-228	24	119	GPC2D	1	N	N	4.3783E-01	1.0000E+00	N	95%	N		1.4688E+00	4.5045E-01	1.0136E+00	
			50	400		Y	(1.309E-02)	(0.000E+00)		8%					(0.000E+00)	4.021816		
1	12/12/06 16:49	RA-228	8	119	GPC2D	1	N	N	4.3783E-01	1.0000E+00	N	95%	N		1.6301E+00	4.5045E-01	1.0136E+00	
			50	400		Y	(1.309E-02)	(0.000E+00)		8%					(0.000E+00)	4.021816		
2	12/12/06 17:44	RA-228	9	119	GPC2D	1	N	N	4.3783E-01	1.0000E+00	N	95%	N		1.8090E+00	4.5045E-01	1.0136E+00	
			50	400		Y	(1.309E-02)	(0.000E+00)		8%					(0.000E+00)	4.021816		
3	12/13/06 05:56	RA-228	11	92	GPC3D	1	N	N	4.8173E-01	1.0000E+00	N	95%	N		7.1902E+00	4.5045E-01	1.0136E+00	
			50	400		N	(4.555E-02)	(0.000E+00)		8%					(0.000E+00)	4.021816		
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Cnt Blk	Dpm Wo Blk	Dpm-Blk	Val Used		Yield,EntFct		Chem Yld,EFctU	IDC/I.LcC	BikLcC/MDC	StdDvMdc/LcC	
12/13/06	RA-228	R	1.186403				1.82500E-01	0.646077	0.646077	1.00	SA	95%			2.68409			
			(0.671716)				(1.0170E-01)	(0.364251)	(0.364251)		(0.014142)					1.166556		
12/13/06	RA-228	R	-0.991987	U4	-1.37500E-01	-0.540204		-0.540204		1.00	SA	95%				2.978727		
			(0.463788)			(6.2799E-02)	(0.250999)	(0.250999)		(0.014142)						1.294621		
12/13/06	RA-228	R	-0.940751	U4	-1.17500E-01	-0.512303		-0.512303		1.00	SA	95%				3.305707		
			(0.535993)			(6.5907E-02)	(0.290668)	(0.290668)		(0.014142)						1.436733		
12/13/06	RA-228	A	-0.248778	U4	-2.41667E-02	-0.135477		-0.135477		1.00	SA	95%				1.725593		
			(0.325507)			(4.5499E-02)	(0.176436)	(0.176436)		(0.008165)						0.750155		
12/13/06	RA-228	R	-0.289229	U4	-1.0000E-02	-0.157505		-0.157505		1.00	SA	95%				10.689282		
			(2.040409)			(7.0534E-02)	(1.111111)	(1.111111)		(0.014142)						4.56394		
Sq	Status	Method	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol			
5	Calc	TF	FILTER	*STLE	Ra228WoBS	JKAHM1AD	PCI/SA	10/30/06 11:05	12/13/06 05:57	12/04/06 13:00	RATA24855	1		1.00	SA			
								31.5	12/12/06 12:05	RATA24855 Alq	98%	,	0.250378	SA				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	
0	12/12/06 15:49	RA-228	23	96	GPC3A	1	N	N	4.6743E-01	1.0000E+00	N	90%	N		1.4566E+00	4.5045E-01	1.0116E+00	
			50	400		Y	(4.156E-02)	(0.000E+00)		7%					(0.000E+00)	3.993962		
1	12/12/06 16:40	RA-228	13	96	GPC3A	1	N	N	4.6743E-01	1.0000E+00	N	90%	N		1.6012E+00	4.5045E-01	1.0116E+00	
			50	400		Y	(4.156E-02)	(0.000E+00)		7%					(0.000E+00)	3.993962		
2	12/12/06 17:30	RA-228	15	96	GPC3A	1	N	N	4.6743E-01	1.0000E+00	N	90%	N		1.7602E+00	4.5045E-01	1.0116E+00	
			50	400		Y	(4.156E-02)	(0.000E+00)		7%					(0.000E+00)	3.993962		
3	12/13/06 05:57	RA-228	19	101	GPC4A	1	N	N	4.8478E-01	1.0000E+00	N	90%	N		7.1925E+00	4.5045E-01	1.0116E+00	
			50	400		N	(2.056E-02)	(0.000E+00)		7%					(0.000E+00)	3.993962		

{(1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU}

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STL Richland

RecCnt:5

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RADCALC v4.8.26

STL Richland

Alpha Beta, Ra-228 by GPC , Calculated Results														12/13/2006 8:24:53 AM			
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BkLcc/C/MDC	StdDvMdc/LCC			
1	12/13/06	RA-228	R	1.392516	2.20000E-01	0.765106	0.765106	1.00 SA	90%			2.382224					
				(0.6532382)	(9.8995E-02)	(0.356234)	(0.356234)	(0.014142)				1.020185					
2	12/13/06	RA-228	R	0.139167	U4	2.00000E-02	0.076464	0.076464	1.00 SA	90%			2.618848				
				(0.530241)	(7.6158E-02)	(0.291309)	(0.291309)	(0.014142)				1.121519					
3	12/13/06	RA-228	R	0.458955	U4	6.00000E-02	0.252169	0.252169	1.00 SA	90%			2.878885				
				(0.624304)	(8.1240E-02)	(0.342768)	(0.342768)	(0.014142)				1.23288					
4	12/13/06	RA-228	A	0.663546	U4	1.00000E-01	0.36458	0.36458	1.00 SA	90%			1.516498				
				(0.349048)	(4.9666E-02)	(0.191269)	(0.191269)	(0.008165)				0.649439					
5	12/13/06	RA-228	R	3.842476	U4	1.27500E-01	2.11215	2.11215	1.00 SA	90%			11.592058				
				(2.763492)	(9.0720E-02)	(1.514408)	(1.514408)	(0.014142)				4.982273					
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Ttracer Vial	Mult/EntyId	Total/Analy Vol	Final/Count Vol		
6	Calc	TF	FILTER	*STLE	Ra228WoBS	JKAHRIAD	PCI/SA		10/30/06 11:25	12/13/06 05:57	12/04/06 13:00	RATA24856	1	1.00 SA			
			536403.P-0787		,J6K220386-2.v4.8.26	FILTER			31.6 /	12/12/06 12:05	RATA24856 Alq	95%	0.249433 SA				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Tra/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	Abn
0	12/12/06 15:49	RA-228	22	102	GPC3B	1	N	N	4.9158E-01	1.0000E+00	N	87%	N		1.4566E+00	4.5045E-01	1.0116E+00
				50	400	Y	(5.491E-02)	(0.0000E+00)			7%			(0.0000E+00)	4.009087		
1	12/12/06 16:40	RA-228	17	102	GPC3B	1	N	N	4.9158E-01	1.0000E+00	N	87%	N		1.6012E+00	4.5045E-01	1.0116E+00
				50	400	Y	(5.491E-02)	(0.0000E+00)			7%			(0.0000E+00)	4.009087		
2	12/12/06 17:30	RA-228	14	102	GPC3B	1	N	N	4.9158E-01	1.0000E+00	N	87%	N		1.7602E+00	4.5045E-01	1.0116E+00
				50	400	Y	(5.491E-02)	(0.0000E+00)			7%			(0.0000E+00)	4.009087		
3	12/13/06 05:57	RA-228	14	100	GPC4B	1	N	N	4.7321E-01	1.0000E+00	N	87%	N		7.1925E+00	4.5045E-01	1.0116E+00
				50	400	N	(9.029E-03)	(0.0000E+00)			7%			(0.0000E+00)	4.009087		
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BkLcc/C/MDC	StdDvMdc/LCC			
1	12/13/06	RA-228	R	1.145618	U4	1.85000E-01	0.627078	0.627078	1.00 SA	87%			2.392227				
				(0.624677)	(9.7147E-02)	(0.340374)	(0.340374)	(0.014142)				1.028807					
2	12/13/06	RA-228	R	0.578648	U4	8.50000E-02	0.316735	0.316735	1.00 SA	87%			2.629625				
				(0.593217)	(8.6241E-02)	(0.324292)	(0.324292)	(0.014142)				1.130997					
3	12/13/06	RA-228	R	0.18709	U4	2.50000E-02	0.102407	0.102407	1.00 SA	87%			2.890732				
				(0.591676)	(7.8978E-02)	(0.323822)	(0.323822)	(0.014142)				1.243299					
4	12/13/06	RA-228	A	0.637118		9.83333E-02	0.34874	0.34874	1.00 SA	87%			1.522739				
				(0.348363)	(5.0676E-02)	(0.190287)	(0.190287)	(0.008165)				0.654928					
5	12/13/06	RA-228	R	0.952976	U4	3.00000E-02	0.521631	0.521631	1.00 SA	87%			12.166468				
				(2.507997)	(7.8899E-02)	(1.372537)	(1.372537)	(0.014142)				5.225482					

0 - (1's Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
 IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration
 SR-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm

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RADCALC v4.8.26
 STL Richland
 RecCnt:7

Batch Nbr: 6332254 **Alpha Beta, Ra-228 by GPC , Calculated Results** 12/13/2006 8:24:53 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol	
7	Calc	TF	FILTER	*STLE	Ra228WoBS	JKAHT1AD	PCI/SA	10/30/06 11:40	12/13/06 05:57	12/04/06 13:00	RATA24857	1		1.00 SA			
					J6K220386-3 v4.8.26	FILTER			31.5	12/12/06 12:05	RATA24857 Alq	94%	-	0.243822 SA			
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay
0	12/12/06 15:49	RA-228	17	104	GPC3C	1	N	N	4.7333E-01	1.0000E+00	N	86%	N		1.4566E+00	4.5045E-01	1.0116E+00
1	12/12/06 16:40	RA-228	50	400	Y	(4.655E-02)	(0.000E+00)		7%					(0.000E+00)	4.101348		
2	12/12/06 17:30	RA-228	16	104	GPC3C	1	N	N	4.7333E-01	1.0000E+00	N	86%	N		1.6012E+00	4.5045E-01	1.0116E+00
3	12/13/06 05:57	RA-228	50	400	Y	(4.655E-02)	(0.000E+00)		7%					(0.000E+00)	4.101348		
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm	Wo Blk	Dpm	Blk	Vol Used		Yield,EnFct	Chem Yld,EFctU	IDC/LcC	BkLcC/MDC	StdDvMdc/Lcc
1	12/13/06	RA-228	R	0.531928	U4	8.0000E-02	(8.6313E-02)	(0.309187)	0.284613		1.00 SA	86%			2.589933		
					(0.578515)			(0.309187)	(0.014142)					1.115438			
1	12/13/06	RA-228	R	0.438573	U4	6.0000E-02	(8.3964E-02)	(0.329733)	0.234663		1.00 SA	86%			2.847188		
2	12/13/06	RA-228	R	0.964242	U4	1.2000E-01	(9.0830E-02)	(0.395951)	0.515927		0.014142				1.226233		
1	12/13/06	RA-228	A	0.644914		8.66667E-02	(5.0277E-02)	(0.200304)	0.345068		0.008165				3.129898		
1	12/13/06	RA-228	R	-1.048614	U4	-3.2500E-02	(7.4035E-02)	(1.278997)	-0.561071		1.00 SA	86%			1.347992		
				(2.391003)					(1.278997)	(0.014142)					1.648724		
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol	
8	Calc	TF	FILTER	*STLE	Ra228WoBS	JKAHV1AD	PCI/SA	10/30/06 11:10	12/13/06 05:57	12/04/06 13:00	RATA24858	1		1.00 SA			
					J6K220386-4 v4.8.26	FILTER			30.6	12/12/06 12:05	RATA24858 Alq	94%	-	0.247854 SA			
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay
0	12/12/06 15:49	RA-228	22	102	GPC3D	1	N	N	4.7942E-01	1.0000E+00	N	84%	N		1.4566E+00	4.5045E-01	1.0116E+00
1	12/12/06 16:40	RA-228	50	400	Y	(4.533E-02)	(0.000E+00)		7%					(0.000E+00)	4.034634		
2	12/12/06 17:30	RA-228	16	102	GPC3D	1	N	N	4.7942E-01	1.0000E+00	N	84%	N		1.6012E+00	4.5045E-01	1.0116E+00
3	12/13/06 05:57	RA-228	50	400	Y	(4.533E-02)	(0.000E+00)		7%					(0.000E+00)	4.034634		
															1.7602E+00	4.5045E-01	1.0116E+00
															7.1925E+00	4.5045E-01	1.0116E+00
															(0.000E+00)	4.034634	

) - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
 IDC - Instrument Detection Level in Conc Units, MLC - Minimum Detectable Concentration
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

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 STL Richland

Alpha Beta, Ra-228 by GPC , Calculated Results												12/13/2006 8:24:53 AM					
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm Blk	Vch Used	Yield,Effct	Chem Yld,EFctU	IDC/iLcC	BikLcC/MDC	StdDvMdc/LcC			
1	12/13/06	RA-228	R	1.237299	1.85000E-01	0.672971	0.672971	0.363086)	(0.014142)	1.00 SA	84%	2.583456					
2	12/13/06	RA-228	R	1.801044	2.45000E-01	0.979757	0.979757	(0.429933)	(0.014142)	1.00 SA	84%	1.11114	2.840068				
3	12/13/06	RA-228	R	0.795981	(1.0314E-01)	(0.429933)	(0.429933)					1.221509	3.122071				
4	12/13/06	RA-228	R	0.525361	U4	6.50000E-02	0.285746	0.285746	(0.014142)	1.00 SA	84%	1.342798					
5	12/13/06	RA-228	R	(0.6817)	(8.3890E-02)	(0.370481)	(0.370481)	(0.370481)	(0.014142)	1.00 SA	84%	1.644601	0.70734				
6	12/13/06	RA-228	A	1.188901	1.65000E-01	0.646158	0.646158	(0.224581)	(0.008165)	1.00 SA	84%	13.591401	5.872537				
7	12/13/06	RA-228	R	(0.414738)	U4	2.75000E-02	0.511447	0.511447	(0.014142)	1.00 SA	84%	13.591401					
8	12/13/06	RA-228	R	0.940328	(2.796737)	(8.1735E-02)	(1.520922)	(1.520922)	(0.014142)			5.872537					
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol		
9	Calc	TF	FILTER	*STLE	Ra228WoBS	JKAHW1AD	PCI/SA		10/30/06 11:45	12/13/06 06:48	12/04/06 13:00	RATA24859	1	1.00 SA			
					J6K220386-5	w4.8.26	FILTER		30.8	12/12/06 12:05	RATA24859	Alq	105%	0.249552 SA			
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Ent	Yld Fct	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	Abn
0	12/12/06 15:50	RA-228	16	99	GPC4A	1	N	N	4.8463E-01	1.0000E+00	N	94%	N	1.4578E+00	4.5045E-01	1.0116E+00	
1	12/12/06 16:40	RA-228	18	99	GPC4A	1	N	N	4.8463E-01	1.0000E+00	N	8%		(0.000E+00)	4.007175		
2	12/12/06 17:30	RA-228	15	99	GPC4A	1	N	N	4.8463E-01	1.0000E+00	N	94%	N	1.6026E+00	4.5045E-01	1.0116E+00	
3	12/13/06 06:48	RA-228	25	101	GPC4A	1	N	N	4.8463E-01	1.0000E+00	N	8%		(0.000E+00)	4.007175		
				50	400				(2.055E-02)	(0.0000E+00)				1.7617E+00	4.5045E-01	1.0116E+00	
														7.9178E+00	4.5045E-01	1.0116E+00	
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm Blk	Vch Used		Yield,Effct	Chem Yld,EFctU	IDC/iLcC	BikLcC/MDC	StdDvMdc/LcC		
1	12/13/06	RA-228	R	0.42175	U4	7.25000E-02	0.230965	0.230965		1.00 SA	94%	2.218445					
2	12/13/06	RA-228	R	(0.489342)	(8.3778E-02)	(0.267712)	(0.267712)	(0.267712)	(0.014142)			0.95214					
3	12/13/06	RA-228	R	0.719445	U4	1.12500E-01	0.393993	0.393993	(0.311722)	(0.311722)	1.00 SA	94%	2.438801				
4	12/13/06	RA-228	R	(0.570442)	(8.8424E-02)	(0.311722)	(0.311722)	(0.311722)	(0.014142)			1.046715					
5	12/13/06	RA-228	R	0.369078	U4	5.25000E-02	0.20212	0.20212	(0.313746)	(0.313746)	1.00 SA	94%	2.68096				
6	12/13/06	RA-228	A	(0.503425)	U4	7.91667E-02	0.275693	0.275693	(0.172329)	(0.172329)	1.00 SA	94%	1.150648				
7	12/13/06	RA-228	R	(0.315076)	(4.8627E-02)	(0.1825717)	(0.1825717)	(0.1825717)	(0.014142)			1.412238					
8	12/13/06	RA-228	R	7.819924	(1.0311E-01)	(1.825717)	(1.825717)	(1.825717)	(0.008165)			0.606122					
				(3.358494)								12.153097					
												5.223408					

{ - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
 IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

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RecCnt:10 RADCALC v4.8.26
 STL Richland

Batch Nbr: 6332254 Alpha Beta, Ra-228 by GPC , Calculated Results 12/13/2006 8:24:54 AM

Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/B/B	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol		
10	Calc	TF	FILTER	*STLE	Ra228WoBS	JKENQ1AA	PCI/SA	B	10/30/06 11:05	12/13/06 06:48	12/04/06 13:00	RATA24860	1	1.00	SA			
			0,INTRALAB BLANK		J6K280000-254	FILTER			31.4	/	12/12/06 12:05	RATA24860	Alq	102%		151.01 SA		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	
0	12/12/06 15:50	RA-228	22	100	GPC4B	1	N	N	4.7305E-01	1.0000E+00	N	93%	N		1.4578E+00	4.5045E-01	1.0116E+00	
1	12/12/06 16:40	RA-228	50	400	GPC4B	1	N	N	4.7305E-01	1.0000E+00	N	7%		(0.0000E+00)	0.006622			
2	12/12/06 17:30	RA-228	50	400	GPC4B	1	N	N	4.7305E-01	1.0000E+00	N	93%	N		1.6026E+00	4.5045E-01	1.0116E+00	
3	12/13/06 06:48	RA-228	9	100	GPC4B	1	Y	(9.026E-03)	(0.0000E+00)	(0.0000E+00)	N	7%		(0.0000E+00)	0.006622			
			50	400	GPC4B	1	N	N	4.7305E-01	1.0000E+00	N	93%	N		1.7617E+00	4.5045E-01	1.0116E+00	
			17	100	GPC4B	1	N	N	4.7305E-01	1.0000E+00	N	7%		(0.0000E+00)	0.006622			
Sq	Calc Date	Parameter	Avg	Sa/Act	Q	Net Cnt Rrt	Dpm	Wt Blk	Dpm	Wt Blk	Dpm	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/I/LcC	BikLcC/MDC	StdDvMdc/LcC	
12/13/06	RA-228	R	0.00139			1.90000E-01	0.62631		0.62631		1.00	Sa	93%		0.00381			
			(0.0000983)			(9.7082E-02)	(0.324139)		(0.324139)		(0.017321)				0.001636			
12/13/06	RA-228	R	0.003171			2.90000E-01	1.050901		1.050901		1.00	Sa	93%		0.004188			
12/13/06	RA-228	R	(0.001209)			(1.0689E-01)	(0.3966865)		(0.3966865)		(0.017321)				0.001759			
			-0.000841			U4	-7.00000E-02		-0.278853		-0.278853		1.00	Sa	93%		0.004604	
12/13/06	RA-228	R	(0.0007786)			(6.5000E-02)	(0.259949)		(0.259949)		(0.017321)				0.001977			
12/13/06	RA-228	A	0.001407			1.36667E-01	0.466119		0.466119		1.00	Sa	93%		0.002425			
			(0.000582)			(5.2784E-02)	(0.191526)		(0.191526)		(0.01)				0.001042			
12/13/06	RA-228	R	0.004862			U4	9.00000E-02		1.611345		1.00	Sa	93%		0.020693			
			(0.00468)			(8.6168E-02)	(1.548426)		(1.548426)		(0.017321)				0.008888			
Sq	Status	Method	Matrix	Protocol	Equation Set	Wrk Ord	Units/Matrix	QC/B/B	Sa/On Date	AnalysisDate/PptWt	Sep1/Sep2 Date	QC/Tracer	Vial	Multi/EntYld	Total/Analy Vol	Final/Count Vol		
11	Calc	TF	FILTER	*STLE	Ra228WoBS	JKENQ1AC	PCI/SA	S	10/30/06 11:05	12/13/06 06:48	12/04/06 13:00	RASC4275	1	1.00	SA			
			0,INTRALAB CHECK		J6K280000-254	FILTER			30.9	/	12/12/06 12:05	RASC4275	Alq	105%		150.17 SA		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj	Decay	
0	12/12/06 15:50	RA-228	152	113	GPC4C	1	N	N	4.8161E-01	1.0000E+00	N	94%	N		1.4578E+00	4.5045E-01	1.0116E+00	
1	12/12/06 16:40	RA-228	50	400	GPC4C	1	Y	(1.241E-02)	(0.0000E+00)	(0.0000E+00)	N	8%		(0.0000E+00)	0.006659			
2	12/12/06 17:30	RA-228	126	113	GPC4C	1	N	N	4.8161E-01	1.0000E+00	N	94%	N		1.6026E+00	4.5045E-01	1.0116E+00	
3	12/13/06 06:48	RA-228	122	113	GPC4C	1	N	N	4.8161E-01	1.0000E+00	N	94%	N		1.7617E+00	4.5045E-01	1.0116E+00	
			50	400	GPC4C	1	Y	(1.241E-02)	(0.0000E+00)	(0.0000E+00)	N	8%		(0.0000E+00)	0.006659			
			32	109	GPC4C	1	N	N	4.8161E-01	1.0000E+00	N	94%	N		7.9178E+00	4.5045E-01	1.0116E+00	
			50	400	GPC4C	1	N	N	(1.241E-02)	(0.0000E+00)	(0.0000E+00)	8%			(0.0000E+00)	0.006659		

RecCnt:11 RADCALC v4.8.26
STL Richland

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} - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 TPU
IDC - Instrument Detection Level in Conc Units, MDC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration
Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

Alpha Beta, Ra-228 by GPC , Calculated Results											12/13/2006 8:24:54 AM			
Sq	Calc Date	Parameter	Avg	Sa Act:	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used	Yield,Enfct	Chem Yld,EFctU	IDC/LcC	BkLCC/MDC	StdDvMdc/Lcc
12/13/06	RA-228	R	0.026924 (0.003607)		2.75750E+00 (2.4800E-01)	8.872479 (1.09216)	8.872479 (1.09216)	1.00 SA (0.017321)	94%	81%	0.003942 0.001707			
12/13/06	RA-228	R	0.024017 (0.003403)		2.23750E+00 (2.2607E-01)	7.914439 (1.040132)	7.914439 (1.040132)	1.00 SA (0.017321)	94%	72%	0.004333 0.001877			
12/13/06	RA-228	R	0.025457 (0.003645)		2.15750E+00 (2.2255E-01)	8.389227 (1.116085)	8.389227 (1.116085)	1.00 SA (0.017321)	94%	77%	0.004764 0.002063			
12/13/06	RA-228	A	0.025466 (0.002051)		2.38417E+00 (1.3424E-01)	8.392048 (0.625419)	8.392048 (0.625419)	1.00 SA (0.01)	94%	77%	0.002509 0.001087			
12/13/06	RA-228	R	0.019489 (0.006454)		3.67500E-01 (1.1611E-01)	6.422239 (2.099671)	6.422239 (2.099671)	1.00 SA (0.017321)	94%	59%	0.021079 0.009108			

) - (Is Uncertainties), Q - Qualifier; U Result is Less Than Lc = 1.645 * TPU
 IDC - Instrument Detection Level in Conc Units, MLCc - Method Decision Level in Conc Units, MDC- Minimum Detectable Concentration
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

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RADCALC v4.8.26
STL Richland
RecCnt:11

UST Number: JKAGW1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-A

Dish Size: 1

File: [quad2.sample.A]JKAGW1AD.180

Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.A_1;3692

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00018	0050	01181	1810	12-DEC-2006 15:54:12.94
2	00000	00016	0050	01156	1810	12-DEC-2006 16:49:28.78
3	00000	00009	0050	01167	1810	12-DEC-2006 17:44:44.38

Bkg File: [quad2.bkgrnd]2006-12-12_0446.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00091	0400	0.23	09348	1810	12-DEC-2006 04:46:29.01

UST Number: JKAGW1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-A

Dish Size: 1

File: [quad3.sample.A]JKAGW1AD.430

Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.A_1;5608

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01257	1920	13-DEC-2006 05:56:58.45

Bkg File: [quad3.bkgrnd]2006-12-13_0233.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00097	0400	0.24	09949	1920	13-DEC-2006 02:33:31.21

UST Number: JKAG11AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-B

File: [quad2.sample.B]JKAG11AD.180

Dish Size: 1

Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.B_1;3689

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01181	1810	12-DEC-2006 15:54:12.94
2	00000	00015	0050	01156	1810	12-DEC-2006 16:49:28.78
3	00000	00010	0050	01167	1810	12-DEC-2006 17:44:44.38

Bkg File: [quad2.bkgrnd]2006-12-12_0446.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00120	0400	0.30	09348	1810	12-DEC-2006 04:46:29.01

UST Number: JKAG11AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-B

Dish Size: 1

File: [quad3.sample.B]JKAG11AD.430

Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.B_1;5616

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00014	0050	01257	1920	13-DEC-2006 05:56:58.45

Bkg File: [quad3.bkgrnd]2006-12-13_0233.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00114	0400	0.29	09949	1920	13-DEC-2006 02:33:31.21

UST Number: JKAG41AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-C

Dish Size: 1

File: [quad2.sample.C]JKAG41AD.180

Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.C_1;3690

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00036	0050	01181	1810	12-DEC-2006 15:54:12.94
2	00000	00015	0050	01156	1810	12-DEC-2006 16:49:28.78
3	00000	00014	0050	01167	1810	12-DEC-2006 17:44:44.38

Bkg File: [quad2.bkgrnd]2006-12-12_0446.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00089	0400	0.22	09348	1810	12-DEC-2006 04:46:29.01

UST Number: JKAG41AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-C

Dish Size: 1

File: [quad3.sample.C]JKAG41AD.430

Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.C_1;5621

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01257	1920	13-DEC-2006 05:56:58.45

Bkg File: [quad3.bkgrnd]2006-12-13_0233.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00116	0400	0.29	09949	1920	13-DEC-2006 02:33:31.21

UST Number: JKAG71AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 2-D

Dish Size: 1

File: [quad2.sample.D]JKAG71AD.180

Bkg File: \$DISK1:[QUAD2.BKGRND]CURRENT.D_1;3689

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00024	0050	01181	1810	12-DEC-2006 15:54:12.94
2	00000	00008	0050	01156	1810	12-DEC-2006 16:49:28.78
3	00000	00009	0050	01167	1810	12-DEC-2006 17:44:44.38

Bkg File: [quad2.bkgrnd]2006-12-12_0446.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00119	0400	0.30	09348	1810	12-DEC-2006 04:46:29.01

UST Number: JKAG71AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 3-D

Dish Size: 1

File: [quad3.sample.D]JKAG71AD.430

Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.D_1;5606

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00011	0050	01257	1920	13-DEC-2006 05:56:58.45

Bkg File: [quad3.bkgrnd]2006-12-13_0233.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00092	0400	0.23	09949	1920	13-DEC-2006 02:33:31.21

UST Number: JKAHM1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-A

File: [quad3.sample.A]JKAHM1AD.180

Dish Size: 1

Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.A_1;5607

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00023	0050	01255	1920	12-DEC-2006 15:49:45.25
2	00000	00013	0050	01236	1920	12-DEC-2006 16:40:00.04
3	00000	00015	0050	01239	1920	12-DEC-2006 17:30:14.76

Bkg File: [quad3.bkgrnd]2006-12-12_0446.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00096	0400	0.24	09949	1920	12-DEC-2006 04:46:38.54

UST Number: JKAHM1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-A

Dish Size: 1

File: [quad4.sample.A]JKAHM1AD.430

Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.A_1;5625

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00019	0050	01210	1850	13-DEC-2006 05:57:08.63

Bkg File: [quad4.bkgrnd]2006-12-13_0228.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00101	0400	0.25	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKAHR1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-B

File: [quad3.sample.B]JKAHR1AD.180

Dish Size: 1

Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.B_1;5615

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00022	0050	01255	1920	12-DEC-2006 15:49:45.25
2	00000	00017	0050	01236	1920	12-DEC-2006 16:40:00.04
3	00000	00014	0050	01239	1920	12-DEC-2006 17:30:14.76

Bkg File: [quad3.bkgrnd]2006-12-12_0446.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00102	0400	0.26	09949	1920	12-DEC-2006 04:46:38.54

UST Number: JKAHR1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-B

Dish Size: 1

File: [quad4.sample.B]JKAHR1AD.430

Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.B_1;5624

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00014	0050	01210	1850	13-DEC-2006 05:57:08.63

Bkg File: [quad4.bkgrnd]2006-12-13_0228.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00100	0400	0.25	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKAHT1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-C

File: [quad3.sample.C]JKAHT1AD.180

Dish Size: 1

Bkg File: \$DISK1:[QUAD3.BKGRND]CURRENT.C_1;5620

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00017	0050	01255	1920	12-DEC-2006 15:49:45.25
2	00000	00016	0050	01236	1920	12-DEC-2006 16:40:00.04
3	00000	00019	0050	01239	1920	12-DEC-2006 17:30:14.76

Bkg File: [quad3.bkgrnd]2006-12-12_0446.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00104	0400	0.26	09949	1920	12-DEC-2006 04:46:38.54

UST Number: JKAHT1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-C

Dish Size: 1

File: [quad4.sample.C]JKAHT1AD.430

Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.C_1;5627

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00012	0050	01210	1850	13-DEC-2006 05:57:08.63

Bkg File: [quad4.bkgrnd]2006-12-13_0228.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0400	0.27	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKAHV1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 3-D

Dish Size: 1

File: [quad3.sample.D] JKAHV1AD.180

Bkg File: \$DISK1:[QUAD3.BKGRND] CURRENT.D_1;5605

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00022	0050	01255	1920	12-DEC-2006 15:49:45.25
2	00000	00025	0050	01236	1920	12-DEC-2006 16:40:00.04
3	00000	00016	0050	01239	1920	12-DEC-2006 17:30:14.76

Bkg File: [quad3.bkgrnd] 2006-12-12_0446.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00102	0400	0.26	09949	1920	12-DEC-2006 04:46:38.54

UST Number: JKAHV1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-D

Dish Size: 1

File: [quad4.sample.D]JKAHV1AD.430

Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.D_1;5641

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00015	0050	01210	1850	13-DEC-2006 05:57:08.63

Bkg File: [quad4.bkgrnd]2006-12-13_0228.D_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0400	0.27	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKAHW1AD Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-A

File: [quad4.sample.A]JKAHW1AD.180

Dish Size: 1

Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.A_1;5624

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00016	0050	01212	1850	12-DEC-2006 15:50:12.34
2	00000	00018	0050	01205	1850	12-DEC-2006 16:40:27.05
3	00000	00015	0050	01206	1850	12-DEC-2006 17:30:41.71

Bkg File: [quad4.bkgrnd]2006-12-12_0446.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00099	0400	0.25	09666	1850	12-DEC-2006 04:46:54.39

UST Number: JKAHW1AD Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-A

Dish Size: 1

File: [quad4.sample.A]JKAHW1AD.430

Bkg File: \$DISK1:[QUAD4.BKGND]CURRENT.A_1;5625

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00025	0050	01209	1850	13-DEC-2006 06:48:07.67

Bkg File: [quad4.bkgnd]2006-12-13_0228.A_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00101	0400	0.25	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKENQ1AA Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-B

Dish Size: 1

File: [quad4.sample.B]JKENQ1AA.180

Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.B_1;5623

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00022	0050	01212	1850	12-DEC-2006 15:50:12.34
2	00000	00027	0050	01205	1850	12-DEC-2006 16:40:27.05
3	00000	00009	0050	01206	1850	12-DEC-2006 17:30:41.71

Bkg File: [quad4.bkgrnd]2006-12-12_0446.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00100	0400	0.25	09666	1850	12-DEC-2006 04:46:54.39

UST Number: JKENQ1AA Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-B

Dish Size: 1

File: [quad4.sample.B]JKENQ1AA.430

Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.B_1;5624

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00017	0050	01209	1850	13-DEC-2006 06:48:07.67

Bkg File: [quad4.bkgrnd]2006-12-13_0228.B_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00100	0400	0.25	09662	1850	13-DEC-2006 02:28:35.44

UST Number: JKENQ1AC Isotope: 180 (QREPORT Rev 11-OCT-98)

Detector: 4-C

Dish Size: 1

File: [quad4.sample.C]JKENQ1AC.180

Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.C_1;5626

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00152	0050	01212	1850	12-DEC-2006 15:50:12.34
2	00000	00126	0050	01205	1850	12-DEC-2006 16:40:27.05
3	00000	00122	0050	01206	1850	12-DEC-2006 17:30:41.71

Bkg File: [quad4.bkgrnd]2006-12-12_0446.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00113	0400	0.28	09666	1850	12-DEC-2006 04:46:54.39

UST Number: JKENQ1AC Isotope: 430 (QREPORT Rev 11-OCT-98)

Detector: 4-C

Dish Size: 1

File: [quad4.sample.C]JKENQ1AC.430

Bkg File: \$DISK1:[QUAD4.BKGRND]CURRENT.C_1;5627

Cycle	Alpha	Beta	Min	Guard	Volts	Finish Date/Time
1	00000	00032	0050	01209	1850	13-DEC-2006 06:48:07.67

Bkg File: [quad4.bkgrnd]2006-12-13_0228.C_1 (QREPORT Rev 11-OCT-98)

Cycle	Count	Min	CPM	Guard	Volts	Date/Time
Bkg	00109	0400	0.27	09662	1850	13-DEC-2006 02:28:35.44

RADIUM 226

SAMPLE AND QC DATA

Lot No., Due Date: J6K220385,J6K220386; 12/19/2006
Client, Site: 536403; AIR MONITORING Yerington Mine
QC Batch No., Method Test: 6332252; RRA2267 Ra-226 by ASC-7
SDG, Matrix: 33127,33128; FILTER

1.0 COC

1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?

Yes No N/A

2.0 QC Batch

2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?

Yes No N/A

2.2 Are the QC appropriate for the analysis included in the batch?

Yes No N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?

Yes No N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample?

Yes No N/A

3.0 QC & Samples

3.1 Is the blank results, yield, and MDA within contract limits?

Yes No N/A

3.2 Is the LCS result, yield, and MDA within contract limits?

Yes No N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits?

Yes No N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits?

Yes No N/A

3.5 Are the sample yields and MDAs within contract limits?

Yes No N/A

4.0 Raw Data

4.1 Were results calculated in the correct units?

Yes No N/A

4.2 Were analysis volumes entered correctly?

Yes No N/A

4.3 Were Yields entered correctly?

Yes No N/A

4.4 Were spectra reviewed/meet contractual requirements?

Yes No N/A

4.5 Were raw counts reviewed for anomalies?

Yes No N/A

5.0 Other

5.1 Are all nonconformances included and noted?

Yes No N/A

5.2 Are all required forms filled out?

Yes No N/A

5.3 Was the correct methodology used?

Yes No N/A

5.4 Was transcription checked?

Yes No N/A

5.5 Were all calculations checked at a minimum frequency?

Yes No N/A

5.6 Are worksheet entries complete and correct?

Yes No N/A

6.0 Comments on any No response:

First Level Review Pam Anderson

Date 12-14-06

STL RICHLAND
DATA REVIEW FORM

STL

Data Review Checklist
RADIOCHIMISTRY
Second Level Review

QC Batch Number: 633Z25Z

Review Item	Yes (Y)	No (N)	N/A (N)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	/		
2. Is the sample Minimum Detectable Activity \leq the Contract Detection Limit?	/		
3. Are the correct isotopes reported?	/		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result \leq the Contract Detection Limit?	/		
2. Does the blank result meet the Contract criteria?	/		
3. Is the blank result \leq the Contract Detection Limit?	/		
4. Is the blank result $>$ the Contract Detection Limit but the sample result \leq the Contract Detection Limit?			/
5. Is the LCS recovery with contract acceptance criteria?	/		
7. Is the LCS Minimum Detectable Activity \leq the Contract Detection Limit?	/		
8. Do the MS/MSD results and yields meet acceptance criteria?			/
9. Do the duplicate sample results and yields meet acceptance criteria?			/
C. Other			
1. Are all Nonconformances included and noted?			/
2. Are all required forms filled out?			
3. Was the correct methodology used?	/		
4. Was transcription checked?	/		
5. Were all calculations checked at a minimum frequency?	/		
6. Were units checked?			

Comments on any "No" response:

Second Level Review

Therrell A. Adam

Date: 12-18-04

Sample Preparation/Analysis							Balance Id:11,1120373922,1120403183																																																																
STL 536403, Brown and Caldwell Caldwell		Brown & BX Ra-226/228 PrpRC5016, SepRC5005 TE Ba-133 by NaI & Ra-226 by Alpha Scint 7 day ingrow		Pipet #: <u>AL 12/4/06 13:00</u>		Pipet #:	Pipet #:																																																																
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Batch: 6332252 FILTER		PM, Quote: SA, 63174		Prep Tech: WoodT,HarrisonJ		Prep Tech:	Prep Tech:																																																																
SEQ Batch, Test: 6332254, BXTF		pCi/sampl		Sep2 DT/Tm Tech:		Sep2 DT/Tm Tech:	Sep2 DT/Tm Tech:																																																																
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#	#	#	#	#	#	#	#																																																																
10/24/2006 12:35	AmtRec: FILTER	#Containers: 1																																																																					

ISV - Insufficient Volume for Analysis

WO Cnt: 4

Prep_SamplePrep v4.8.26

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2
pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

Sample Preparation/Analysis										Balance Id:11,11,11,11,11,1120373922,11,	
ST# 536403, Brown and Caldwell		Brown &		BX Ra-226/228 PrPRC5016, SepRC5005		Pipet #:					
Caldwell				TE Ba-133 by Nat & Ra-226 by Alpha Scint 7 day ingrow							
AnalyDueDate: 12/18/2006		01 STANDARD TEST SET		Sep1 DT/Tm Tech:		Sep2 DT/Tm Tech:					
Batch: 6332252 FILTER		PM, Quote: SA , 63174		Prep Tech: Woodt,HarrisonJ		Prep Tech: Woodt,HarrisonJ					
SEQ Batch, Test: 6332254, BXTF		pCi/samp									
Work Order, Lot, Sample Date		Total Amt /Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
5 JKAHM-1-AC	0.833sa	500.21sa	150.35g,in	0.2504g	RATA24855 11/22/06	7.5569 7.393	G/3	21 00	12/4/06 in		
J6K220386-1-SAMP				1.5222		12/7/06		143712			
10/30/2006 11:05		AmtRec: FILTER	#Containers: 1	RATA24856 11/22/06		7.5088 7.145	G6	21 00	12/4/06 in	BNC	12/12/06 10320
6 JKAHR-1-AC	0.833sa	501.57sa	150.19g,in	0.2494g	RATA24856 11/22/06	7.5088 7.145	G6	21 00	12/4/06 in	CSD	12/12/06 10260
J6K220386-2-SAMP				1.0509		12/7/06		143710			
10/30/2006 11:25		AmtRec: FILTER	#Containers: 1	RATA24857 11/22/06		7.4799 7.065	G7	21 00	12/4/06 in	DSA	12/12/06 10330
7 JKTAH-1-AC	0.833sa	513.01sa	150.16g,in	0.2438g	RATA24857 11/22/06	7.4799 7.065	G7	21 00	12/4/06 in		
J6K220386-3-SAMP				1.0507		12/7/06		143710			
10/30/2006 11:40		AmtRec: FILTER	#Containers: 1	RATA24858 11/22/06		7.4992 7.041	G72	21 00	12/4/06 in		
8 JKAHV-1-AC	0.833sa	504.43sa	150.08g,in	0.2479g	RATA24858 11/22/06	7.4992 7.041	1.0651			FSA	12/12/06 10350
J6K220386-4-SAMP											
10/30/2006 11:10		AmtRec: FILTER	#Containers: 1	Scr:		Alpha:		Beta:			
STL Richland Richland Wa.		Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added		Scr:		Alpha:		Beta:			
WO Cnt: 8		ISV - Insufficient Volume for Analysis		Prep_SamplePrep v4.8.26							

12/14/2006 2:33:32 PM

ICOC Fraction Transfer/Status Report

ByDate: 12/14/2005, 12/19/2006, Batch: '6332252', User: *ALL Order By DateTimeAccepting

Q	Batch	Work Ord	CurStatus	Accepting	Comments
6332252					
AC		CalcC	WoodT	11/30/2006 8:54:13	
SC		wagarr	IsBatched	11/28/2006 10:37:01 AM	ICOC_RADCALC v4.8.24
SC		WoodT	InPrep	11/30/2006 8:54:13 AM	RICH-RC-5016 REVISION 5
SC		HarrisonJ	InPrep	12/1/2006 11:48:22 AM	RICH-RC-5005 Revision 5
SC		LongA	Sep1C	12/4/2006 1:20:51 PM	RICH-RC-5005 REVISION 5
SC		DAWKINSO	InCnt1	12/4/2006 5:22:34 PM	RICH-RD-0007 REVISION 5
SC		DAWKINSO	Cnt1C	12/4/2006 9:12:21 PM	RICH-RD-0007 REVISION 5
SC		PetersonJ	InSep2	12/7/2006 2:51:03 PM	RICH-RC-5005 REVISION 5
SC		PetersonJ	CalcC	12/12/2006 4:02:17 PM	RICH-RC-5005 REVISION 5
AC		HarrisonJ		12/1/2006 11:48:22	
AC		LongA		12/4/2006 1:20:51 PM	
AC		DAWKINSO		12/4/2006 5:22:34 PM	
AC		DAWKINSO		12/4/2006 9:12:21 PM	
AC		PetersonJ		12/7/2006 2:51:03 PM	
AC		PetersonJ		12/12/2006 4:02:17	

AC: Accepting Entry; SC: Status Change

STL Richland

Richland Wa.

Grp Rec Cnt: 7

ICOCPARTS v4.8.26

12/14/2006 2:33:31 PM

Rpt DB Transfer log (Batch Results)

SDG or Batch Isotope	Rpt Db Id	Method	RTst	Qc	LotSample Analysis Date	Client Id Result	Matrix	Received Date			Sample Date Units	Expected Yield	Volumes		
								Cnt	Uncert	Tot Uncert					
33127	9JKAG110	J6K2203852	P-0783		12/12/2006 1:02:00 PM	1.081E-01	FILTER	11/21/2006		10/24/2006 12:10:00 PM		1.033	1.0E+0	2.456E-1	
								RA-226	BXTE	0	PCI/SA				
RA-228	BXTF	0	12/13/2006 5:56:58		-9.3275E-02	3.353E-01	3.353E-01	1.728E+00	PCI/SA		0.949	1.0E+0	2.456E-1		
33127	9JKAG410	J6K2203853	P-0784		12/12/2006 1:06:00 PM	2.1612E-01	FILTER	11/21/2006		10/24/2006 12:30:00 PM		1.036	1.0E+0	2.494E-1	
								RA-226	BXTE	0	PCI/SA				
RA-228	BXTF	0	12/13/2006 5:56:58		1.4597E+00	3.839E-01	4.165E-01	1.568E+00	PCI/SA		0.933	1.0E+0	2.494E-1		
33127	9JKAG710	J6K2203854	000547		12/12/2006 1:12:00 PM	1.1649E-01	FILTER	11/21/2006		10/24/2006 12:35:00 PM		1.048	1.0E+0	2.486E-1	
								RA-226	BXTE	0	PCI/SA				
RA-228	BXTF	0	12/13/2006 5:56:58		-2.4878E-01	3.255E-01	3.255E-01	1.726E+00	PCI/SA		0.948	1.0E+0	2.486E-1		
33127	9JKAGW10	J6K2203851	P-0782		12/12/2006 1:11:00 PM	6.2171E-01	FILTER	11/21/2006		10/24/2006 11:55:00 AM		0.839	1.0E+0	2.481E-1	
								RA-226	BXTE	0	PCI/SA				
RA-228	BXTF	0	12/13/2006 5:56:58		4.8303E-01	3.742E-01	4.146E-01	1.94E+00	PCI/SA		0.773	1.0E+0	2.481E-1		
33128	9JKAHM10	J6K2203861	P-0786		12/12/2006 1:32:00 PM	2.6637E-01	FILTER	11/21/2006		10/30/2006 11:05:00 AM		0.978	1.0E+0	2.504E-1	
								RA-226	BXTE	0	PCI/SA				
RA-228	BXTF	0	12/13/2006 5:57:08		6.6355E-01	3.296E-01	3.49E-01	1.516E+00	PCI/SA		0.896	1.0E+0	2.504E-1		
33128	9JKAHR10	J6K2203862	P-0787		12/12/2006 1:26:00 PM	4.8919E-01	FILTER	11/21/2006		10/30/2006 11:25:00 AM		0.952	1.0E+0	2.494E-1	
								RA-226	BXTE	0	PCI/SA				
RA-228	BXTF	0	12/13/2006 5:57:08		6.3712E-01	3.283E-01	3.484E-01	1.523E+00	PCI/SA		0.874	1.0E+0	2.494E-1		
33128	9JKAH10	J6K2203863	P-0788		12/12/2006 1:33:00 PM	8.4953E-01	FILTER	11/21/2006		10/30/2006 11:40:00 AM		0.945	1.0E+0	2.438E-1	
								RA-226	BXTE	0	PCI/SA				
RA-228	BXTF	0	12/13/2006 5:57:08		6.4491E-01	3.741E-01	3.749E-01	1.649E+00	PCI/SA		0.865	1.0E+0	2.438E-1		
33128	9JKAHV10	J6K2203864	P-0789		12/12/2006 1:35:00 PM	7.035E-02	FILTER	11/21/2006		10/30/2006 11:10:00 AM		0.939	1.0E+0	2.479E-1	
								RA-226	BXTE	0	PCI/SA				
RA-228	BXTF	0	12/13/2006 5:57:08		1.188E+00	3.952E-01	4.147E-01	1.645E+00	PCI/SA		0.835	1.0E+0	2.479E-1		
33128	9JKAHW10	J6K2203865	000550		12/12/2006 1:53:00 PM	2.0095E-01	FILTER	11/21/2006		10/30/2006 11:45:00 AM		1.055	1.0E+0	2.496E-1	
								RA-226	BXTE	0	PCI/SA				
RA-228	BXTF	0	12/13/2006 6:48:07		5.0342E-01	3.105E-01	3.151E-01	1.412E+00	PCI/SA		0.944	1.0E+0	2.496E-1		
33127	JKENM1AB	J6K280000252	INTRA-LAB BLANK		12/12/2006 1:53:01 PM	3.0085E-02	FILTER	11/21/2006		10/24/2006 11:55:00 AM		1.053	1.0E+0	1.0E+0	
								RA-226	BXTE	0	PCI/SA				
33127	JKENM1CS	J6K280000252	INTRA-LAB CHECK		12/12/2006 1:53:01 PM	1.3992E+00	FILTER	11/21/2006		10/24/2006 11:55:00 AM		1.3726E+00	1.047	1.0E+0	1.0E+0
								RA-226	BXTE	0	S				

6332252, **Samples Inserted | Updated | NotUpdated => 2 | 0 | 9,

**Results Inserted | ReTestInserted | Updated | NotInserted => 11 | 0 | 0 | 0.

**Diff RptDb | Qtims => .

Alpha Beta, Ra-226 by ASC-7 , Results Summary Report

12/12/2006 3:41:02 PM

Status	Meth	Matrix	Wrk Ord	Parameter	Sa Act	Uncert	Q	Units	Av	ILcC	IDC	QC	Yield	RYld			
Ra-226 by ASC-7																	
				Richland Standard Ra-226/Ra-228 Deem Wo Blk Subt.													
Calc	TE	FILTER	JKAGW1AC	RA-226	6.22E-01	(2.77E-01)	PCI/SA	R	3.98E-01	8.80E-01				84%			
Calc	TE	FILTER	JKAG11AC	RA-226	1.08E-01	(1.59E-01)	U4 PCI/SA	R	2.54E-01	5.91E-01				103%			
Calc	TE	FILTER	JKAG41AC	RA-226	2.16E-01	(1.61E-01)	U4 PCI/SA	R	2.37E-01	5.52E-01				104%			
Calc	TE	FILTER	JKAG71AC	RA-226	1.16E-01	(1.08E-01)	U4 PCI/SA	R	1.57E-01	3.90E-01				105%			
Calc	TE	FILTER	JKAHM1AC	RA-226	2.66E-01	(1.17E-01)	PCI/SA	R	1.29E-01	3.31E-01				98%			
Calc	TE	FILTER	JKAHR1AC	RA-226	4.89E-01	(1.75E-01)	PCI/SA	R	1.64E-01	4.33E-01				95%			
Calc	TE	FILTER	JKAHT1AC	RA-226	8.50E-01	(2.65E-01)	PCI/SA	R	3.02E-01	7.07E-01				94%			
Calc	TE	FILTER	JKAHV1AC	RA-226	7.04E-02	(1.74E-01)	U4 PCI/SA	R	2.83E-01	6.81E-01				94%			
Calc	TE	FILTER	JKAHW1AC	RA-226	2.01E-01	(1.27E-01)	U4 PCI/SA	R	1.76E-01	4.23E-01				105%			
Calc	TE	FILTER	JKENM1AA	RA-226	3.01E-02	(2.90E-02)	U4 PCI/SA	R	4.33E-02	1.04E-01	B			102%			
Calc	TE	FILTER	JKENM1AC	RA-226	1.40E+00	(1.80E-01)	PCI/SA	R	2.32E-02	6.36E-02	S			105%			
														102%			

P. Anderson
12-13-06

() - (ts Uncertainties)
 IDC - Instrument Detection Level in Conc Units
 MLC - Method Decision Level in Conc Units
 MDC - Minimum Detectable Concentration
 *Std - Lc, MDC using StdDev for Set of Blanks

Page 1
 Q - Qualifier, U is Less Than Lc = 1.645*TPU
 All Results Displayed to Three Digits Regardless of Significants
 Date/Time - mm/dd/yy hh:mm, 24hr Time

RecCnt:11
 RADCALC v4.8.26
 STL Richland

Detailed Report

Sq	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PpiWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn		
1	Calc	TE	FILTER	*STILE	Ra226WoBS	JKAGW1AC	PCI/SA	10/24/06 11:55	12/12/06 13:11	12/07/06 14:37	RATA24851	1	1.00 Sa				
			CID:P-0782LOT.J6K2203851 v4.8.26							12/12/06 10:11	RATA24851 Alq	84%	0.248084 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:11	RA-226	51	37	ASC1RH	ASC	N	2.4697E+00	1.0000E+00	N	84%	N					
							(9.113E-02)	(0.000E+00)			7%						
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used			Yield,EnFct	Chem Yld,EFctU	IDLCLCC	BIKLCC/MDC	StdDvMdCLcc	
1	12/12/06	RA-226	R	0.621696		4.03333E-01	0.342379	0.342379	1.00 Sa		84%						
						(1.7515E-01)	(0.15171)	(0.15171)				(0.014142)					
Sq	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PpiWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn		
2	Calc	TE	FILTER	*STILE	Ra226WoBS	JKAG11AC	PCI/SA	10/24/06 12:10	12/12/06 13:02	12/07/06 14:37	RATA24852	1	1.00 Sa				
			CID:P-0783LOT.J6K2203852 v4.8.26							12/12/06 10:02	RATA24852 Alq	103%	0.24562 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:02	RA-226	50	60	ASC2RC	ASC	N	2.0913E+00	1.0000E+00	N	103%	N					
							(6.818E-02)	(0.000E+00)			8%						
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used			Yield,EnFct	Chem Yld,EFctU	IDLCLCC	BIKLCC/MDC	StdDvMdCLcc	
1	12/12/06	RA-226	R	0.108101		U4 7.00000E-02	0.058942	0.058942	1.00 Sa		103%						
						(1.0279E-01)	(0.086705)	(0.086705)				(0.014142)					
Sq	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PpiWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn		
3	Calc	TE	FILTER	*STILE	Ra226WoBS	JKAG41AC	PCI/SA	10/24/06 12:30	12/12/06 13:06	12/07/06 14:37	RATA24853	1	1.00 Sa				
			CID:P-0784LOT.J6K2203853 v4.8.26							12/12/06 10:06	RATA24853 Alq	104%	0.249433 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:06	RA-226	50	60	ASC7UA	ASC	N	2.2064E+00	1.0000E+00	N	104%	N					
							(1.072E-01)	(0.000E+00)			8%						
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used			Yield,EnFct	Chem Yld,EFctU	IDLCLCC	BIKLCC/MDC	StdDvMdCLcc	
1	12/12/06	RA-226	R	0.216124		U4 1.50000E-01	0.119671	0.119671	1.00 Sa		104%						
						(1.1030E-01)	(0.08871)	(0.08871)				(0.014142)					
Sq	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PpiWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn		
4	Calc	TE	FILTER	*STILE	Ra226WoBS	JKAG71AC	PCI/SA	10/24/06 12:35	12/12/06 13:12	12/07/06 14:37	RATA24854	1	1.00 Sa				
			CID:000547LOT.J6K2203854 v4.8.26							12/12/06 10:12	RATA24854 Alq	105%	0.248644 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:12	RA-226	50	60	ASCASA	ASC	N	2.2802E+00	1.0000E+00	N	105%	N					
							(1.047E-01)	(0.000E+00)			8%						
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used			Yield,EnFct	Chem Yld,EFctU	IDLCLCC	BIKLCC/MDC	StdDvMdCLcc	
1	12/12/06	RA-226	R	0.160602		U4 1.030E-01	(0.08871)	(0.08871)	1.00 Sa		104%						
Sq	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PpiWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn		
1	Calc	TE	FILTER	*STILE	Ra226WoBS	JKAG71AC	PCI/SA	10/24/06 12:35	12/12/06 13:12	12/07/06 14:37	RATA24854	1	1.00 Sa				
										12/12/06 10:12	RATA24854 Alq	105%	0.248644 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:12	RA-226	10	7	ASCASA	ASC	N	2.4504E+00	1.0000E+00	N	105%	N					
							(1.047E-01)	(0.000E+00)			8%						
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used			Yield,EnFct	Chem Yld,EFctU	IDLCLCC	BIKLCC/MDC	StdDvMdCLcc	
1	12/12/06	RA-226	R	0.021816		U4 1.030E-01	(0.08871)	(0.08871)	1.00 Sa		104%						
Sq	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PpiWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn		
1	Calc	TE	FILTER	*STILE	Ra226WoBS	JKAG71AC	PCI/SA	10/24/06 12:35	12/12/06 13:12	12/07/06 14:37	RATA24854	1	1.00 Sa				
										12/12/06 10:12	RATA24854 Alq	105%	0.248644 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:12	RA-226	50	60	ASCASA	ASC	N	2.4504E+00	1.0000E+00	N	105%	N					
							(1.047E-01)	(0.000E+00)			8%						
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used			Yield,EnFct	Chem Yld,EFctU	IDLCLCC	BIKLCC/MDC	StdDvMdCLcc	
1	12/12/06	RA-226	R	0.021816		U4 1.030E-01	(0.08871)	(0.08871)	1.00 Sa		104%						
Sq	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PpiWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn		
1	Calc	TE	FILTER	*STILE	Ra226WoBS	JKAG71AC	PCI/SA	10/24/06 12:35	12/12/06 13:12	12/07/06 14:37	RATA24854	1	1.00 Sa				
										12/12/06 10:12	RATA24854 Alq	105%	0.248644 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:12	RA-226	50	60	ASCASA	ASC	N	2.4504E+00	1.0000E+00	N	105%	N					
							(1.047E-01)	(0.000E+00)			8%						
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used			Yield,EnFct	Chem Yld,EFctU	IDLCLCC	BIKLCC/MDC	StdDvMdCLcc	
1	12/12/06	RA-226	R	0.021816		U4 1.030E-01	(0.08871)	(0.08871)	1.00 Sa		104%						
Sq	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PpiWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn		
1	Calc	TE	FILTER	*STILE	Ra226WoBS	JKAG71AC	PCI/SA	10/24/06 12:35	12/12/06 13:12	12/07/06 14:37	RATA24854	1	1.00 Sa				
										12/12/06 10:12	RATA24854 Alq	105%	0.248644 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:12	RA-226	50	60	ASCASA	ASC	N	2.4504E+00	1.0000E+00	N	105%	N					
							(1.047E-01)	(0.000E+00)			8%						
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used			Yield,EnFct	Chem Yld,EFctU	IDLCLCC	BIKLCC/MDC	StdDvMdCLcc	
1	12/12/06	RA-226	R	0.021816		U4 1.030E-01	(0.08871)	(0.08871)	1.00 Sa		104%						
Sq	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB Sa/On Date	AnalysisDate/PpiWt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol	Abn		
1	Calc	TE	FILTER	*STILE	Ra226WoBS	JKAG71AC	PCI/SA	10/24/06 12:35	12/12/06 13:12	12/07/06 14:37	RATA24854	1	1.00 Sa				
										12/12/06 10:12	RATA24854 Alq	105%	0.248644 Sa				
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency 2	Ent	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:12	RA-226	50	60	ASCASA	ASC	N	2.4504E+00	1.0000E+00	N	105%	N					
							(1.047E-01)	(0.000E+00)			8%						
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk										

Batch Nbr: 6332252

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

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STL RICHLAND

Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm/Wo Blk	Dpm-Blk	Vol Used	Yield,EnFct	Chem Yld,EFctU	IDC/IcC	BkLcc/MDC	StdDwMdC/IcC		
Sq	Status	Method	Matrix	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/PpWt	Sep1/Sep2 Date	QC/Tracer	Vial	Mult/EntYld	Total/Analy Vol	Final/Count Vol
5	Calc	TE	FILTER	*STLE	Ra226WoBS	JKAHM1AC	PCI/SA	FILTER	10/30/06 11:05	12/12/06 13:32	12/07/06 14:37	RATA24855	1	1.00 Sa	105%	0.389754
	CID:P-0788LOT:J6K2203861 v4.8.26	(0.108481)	R	0.116491	U4	8.33333E-02	0.064298	0.064298 (0.059784)	(0.014142)			RATA24855	1	1.00 Sa	0.157087	
1	Calc	TE	FILTER	*STLE	Ra226WoBS	JKAHM1AC	PCI/SA	FILTER	10/30/06 11:05	12/12/06 13:32	12/12/06 10:32	RATA24855	Alq	98%	0.250378 Sa	
	CID:P-0788LOT:J6K2203861 v4.8.26	(0.116822)	R	0.266382	U4	1.96667E-01	0.148048	0.148048 (0.064474)	(0.014142)			1.7562E+00	4.5045E-01	1.0000E+00		
1	Calc	TE	FILTER	*STLE	Ra226WoBS	JKAHR1AC	PCI/SA	FILTER	10/30/06 11:25	12/12/06 13:26	12/07/06 14:37	RATA24856	1	1.00 Sa	0.330517	0.128631
	CID:P-0788LOT:J6K2203862 v4.8.26	(0.116822)	R	0.266382	U4	1.96667E-01	0.148048	0.148048 (0.064474)	(0.014142)			1.7562E+00	4.5045E-01	1.0000E+00		
1	Calc	TE	FILTER	*STLE	Ra226WoBS	JKAHR1AC	PCI/SA	FILTER	10/30/06 11:25	12/12/06 13:26	12/12/06 10:26	RATA24856	Alq	95%	0.249433 Sa	
	CID:P-0788LOT:J6K2203862 v4.8.26	(0.116822)	R	0.266382	U4	1.96667E-01	0.148048	0.148048 (0.064474)	(0.014142)			1.7562E+00	4.5045E-01	1.0000E+00		
1	Calc	TE	FILTER	*STLE	Ra226WoBS	JKAHT1AC	PCI/SA	FILTER	10/30/06 11:40	12/12/06 13:33	12/07/06 14:37	RATA24857	1	1.00 Sa	0.432542	0.164037
	CID:P-0788LOT:J6K2203863 v4.8.26	(0.174546)	R	0.489198	U4	2.53333E-01	0.270878	0.270878 (0.095626)	(0.014142)			1.7562E+00	4.5045E-01	1.0000E+00		
1	Calc	TE	FILTER	*STLE	Ra226WoBS	JKAHT1AC	PCI/SA	FILTER	10/30/06 11:40	12/12/06 13:33	12/12/06 10:33	RATA24857	Alq	94%	0.243822 Sa	
	CID:P-0788LOT:J6K2203863 v4.8.26	(0.174546)	R	0.489198	U4	2.53333E-01	0.270878	0.270878 (0.095626)	(0.014142)			1.7562E+00	4.5045E-01	1.0000E+00		
7	Calc	TE	FILTER	*STLE	Ra226WoBS	JKAHM1AC	PCI/SA	FILTER	10/30/06 11:40	12/12/06 13:33	12/07/06 14:37	RATA24857	1	1.00 Sa	0.432542	0.164037
	CID:P-0788LOT:J6K2203863 v4.8.26	(0.264752)	R	0.849527	U4	4.46667E-01	0.459816	0.459816 (0.14294)	(0.014142)			1.7562E+00	4.5045E-01	1.0000E+00		
1	Calc	TE	FILTER	*STLE	Ra226WoBS	JKAHM1AC	PCI/SA	FILTER	10/30/06 11:10	12/12/06 13:35	12/07/06 14:37	RATA24858	1	1.00 Sa	0.4101348	0.302258
	CID:P-0789LOT:J6K2203864 v4.8.26	(0.264752)	R	0.849527	U4	4.46667E-01	0.459816	0.459816 (0.14294)	(0.014142)			1.7562E+00	4.5045E-01	1.0000E+00		
8	Calc	TE	FILTER	*STLE	Ra226WoBS	JKAHM1AC	PCI/SA	FILTER	10/30/06 11:10	12/12/06 10:35	RATA24858	Alq	94%	0.247854 Sa		
	CID:P-0789LOT:J6K2203864 v4.8.26	(0.264752)	R	0.849527	U4	4.46667E-01	0.459816	0.459816 (0.14294)	(0.014142)			1.7562E+00	4.5045E-01	1.0000E+00		

{(1 Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
 IDC - Instrument Detection Level in Conc Units, MDC - Method Decision Concentration
 Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

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RADCALC v4.8.26
 STL Richland
 RecCnt:8

Alpha Beta, Ra-226 by ASC-7 , Calculated Results

12/12/2006 3:41:03 PM

Sq	Calc Date	Method	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
1	12/12/06 13:35	RA-226	10	10	ASCFSA ASC	N	1.6102E+00	1.0000E+00	N	94%	N	1.7557E+00	4.5045E-01	1.0000E+00		
			50	60		Y	(2.979E-02)	(0.000E+00)		8%		(0.000E+00)	4.034634			
1	12/12/06	RA-226	R	0.070356	U4	3.33333E-02	0.038711	0.038711	1.00 Sa	94%	Yield,EnFct	Chem Yld,EE+U	IDC/LcC	BikLcC/MDC		
			(0.173902)	(8.23237E-02)		(0.095662)	(0.095662)	(0.014142)								
9	Calc	TE	FILTER	*STILE	Ra226WoBS	JKAHW1AC	PCI/SA	10/30/06 11:45	12/12/06 13:53	12/07/06 14:50	RATA24859	1	1.00 Sa			
			CID:000550LOT:J6K2203865 v4.8.26	FILTER						12/12/06 10:53	RATA24869	Alq	105%	0.249552 Sa		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:53	RA-226	16	10	ASCNMA ASC	N	2.4172E+00	1.0000E+00	N	105%	N			1.7549E+00	4.5045E-01	1.0000E+00
			50	60		Y	(1.136E-01)	(0.000E+00)		8%				(0.000E+00)	4.007175	
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used		Yield,EnFct	Chem Yld,EE+U	IDC/LcC	BikLcC/MDC		
12/12/06	RA-226	R	0.200948	U4	1.53333E-01	0.111321	0.111321	1.00 Sa	105%							
			(0.127355)	(9.5801E-02)	(0.070315)	(0.070315)	(0.014142)									
Sq	Status	Method	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
10	Calc	TE	FILTER	*STILE	Ra226WoBS	JKENM1AA	PCI/SA	B	10/24/06 11:55	12/12/06 13:53	RATA24860	1	1.00 Sa			
			CID:INTRA-LAB:BLANKLOT:J6K280000252 v4.8.26	FILTER						12/12/06 10:53	RATA24860	Alq	102%	1.00 Sa		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:53	RA-226	13	10	ASCPMA ASC	N	2.4525E+00	1.0000E+00	N	102%	N			1.7549E+00	4.5045E-01	1.0001E+00
			50	60		Y	(8.241E-02)	(0.000E+00)		8%				(0.000E+00)	1.00	
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used		Yield,EnFct	Chem Yld,EE+U	IDC/LcC	BikLcC/MDC		
12/12/06	RA-226	R	0.030085	U4	9.33333E-02	0.066785	0.066785	1.00 Sa	102%							
			(0.028952)	(8.9318E-02)	(0.064174)	(0.064174)	(0.017321)									
Sq	Status	Method	Protocol	Equation Set	Wk Ord	Units/Matrix	QC/BB	Sa/On Date	AnalysisDate/Ppt/Wt	Sep1/Sep2 Date	QC/Tracer Vial	Mult/EntYid	Total/Analy Vol	Final/Count Vol		
11	Calc	TE	FILTER	*STILE	Ra226WoBS	JKENM1AC	PCI/SA	S	10/24/06 11:55	12/12/06 13:53	RASC4275	1	1.00 Sa			
			CID:INTRA-LAB:CHECKLOT:J6K280000252 v4.8.26	FILTER						12/12/06 10:53	RASC4275	Alq	105%	1.00 Sa		
Sq	Cnt Date	Parameter	Sample Cnt	Bkgnd Cnt	Instr	Geom	Trc/Av	Ent	Efficiency1	Efficiency2	Yld Fct	Ent	Blk Value	Ingr Fct	Conv Fct/VolAdj Decay	
1	12/12/06 13:53	RA-226	224	3	ASQCQMCAASC	N	2.5030E+00	1.0000E+00	N	105%	N			1.7549E+00	4.5045E-01	1.0001E+00
			50	60		Y	(1.307E-01)	(0.000E+00)		8%				(0.000E+00)	1.00	
Sq	Calc Date	Parameter	Avg	Sa Act	Q	Net Cnt Rt	Dpm Wo Blk	Dpm-Blk	Vol Used		Yield,EnFct	Chem Yld,EE+U	IDC/LcC	BikLcC/MDC		
12/12/06	RA-226	R	1.399164	U4	4.43000E+00	3.105984	3.105984	1.00 Sa	105%							
			(0.179905)	(3.0072E-01)	(0.363983)	(0.363983)	(0.017321)									

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RADCALC v4.8.26
STL Richland
RecCnt:11

0 - (1s Uncertainties), Q - Qualifier, U Result is Less Than Lc = 1.645 * TPU
IDC - Instrument Detection Level in Conc Units, MLC - Method Decision Level in Conc Units, MDC - Minimum Detectable Concentration
Sr-89 Counts are Derived from the Combination of Each Sr-89/90 and Y-90 Count, All Result Digits May Not be Significant, Date/Time - mm/dd/yy hh:mm, 24hr Time

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAGW1AC Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 1.1915
Technician: JP
Analysis Size: 0.2481 Analysis Unit: G
Report Date: 12-DEC-2006 14:01:00.57
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:11:00.00
Detector ID: 1 Cell ID: 1RH
Bkg Date: 12-DEC-2006 08:30:39.73 Bkg Counts: 000037 Bkg Duration: 000060.0
Count Date: 12-DEC-2006 13:11:00.26 Counts: 000051 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAG11AC Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 0.9680
Technician: JP
Analysis Size: .2456 Analysis Unit: G
Report Date: 12-DEC-2006 13:52:00.61
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:02:00.00
Detector ID: 2 Cell ID: 2RC
Bkg Date: 12-DEC-2006 08:37:55.75 Bkg Counts: 000015 Bkg Duration: 000060.0
Count Date: 12-DEC-2006 13:02:00.29 Counts: 000016 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAG41AC Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 0.9654
Technician: JP
Analysis Size: 0.2494 Analysis Unit: G
Report Date: 12-DEC-2006 13:56:00.59
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:06:00.00
Detector ID: 7 Cell ID: 7UA
Bkg Date: 12-DEC-2006 08:31:16.31 Bkg Counts: 000015 Bkg Duration: 000060.0
Count Date: 12-DEC-2006 13:06:00.27 Counts: 000020 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAG71AC

Isotope: RA-226

Client: STL

Matrix Code: 103

Batch Nbr: 6332252
Technician: JP

Activity Unit: PCI/SA

Multiplier: 0.9540

Analysis Size: 0.2486

Analysis Unit: G

Report Date: 12-DEC-2006 14:02:00.59

First Separation Date: 7-DEC-2006 14:37:00.00

Second Separation Date: 12-DEC-2006 10:12:00.00

Detector ID: 10

Cell ID: ASA

Bkg Date: 12-DEC-2006 08:31:40.79

Bkg Counts: 000007

Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:12:00.27

Counts: 000010

Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAHM1AC Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 1.0222
Technician: JP
Analysis Size: 0.2504 Analysis Unit: G
Report Date: 12-DEC-2006 14:22:00.59
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:32:00.00
Detector ID: 11 Cell ID: BMC
Bkg Date: 12-DEC-2006 08:31:50.50 Bkg Counts: 000005 Bkg Duration: 000060.0
Count Date: 12-DEC-2006 13:32:00.27 Counts: 000014 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAHR1AC

Isotope: RA-226

Client: STL

Matrix Code: 103

Batch Nbr: 6332252
Technician: JP

Activity Unit: PCI/SA

Multiplier: 1.0509

Analysis Size: 0.2494

Analysis Unit: G

Report Date: 12-DEC-2006 14:16:00.63

First Separation Date: 7-DEC-2006 14:37:00.00

Second Separation Date: 12-DEC-2006 10:26:00.00

Detector ID: 12

Cell ID: CSD

Bkg Date: 12-DEC-2006 08:43:53.32

Bkg Counts: 000004

Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:26:00.25

Counts: 000016

Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAHT1AC Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 1.0587
Technician: JP
Analysis Size: 0.2438 Analysis Unit: G
Report Date: 12-DEC-2006 14:23:00.62
First Separation Date: 7-DEC-2006 14:37:00.00
Second Separation Date: 12-DEC-2006 10:33:00.00
Detector ID: 13 Cell ID: DSA
Bkg Date: 12-DEC-2006 08:32:00.97 Bkg Counts: 000014 Bkg Duration: 000060.0
Count Date: 12-DEC-2006 13:33:00.27 Counts: 000034 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAHV1AC

Isotope: RA-226

Client: STL

Matrix Code: 103

Batch Nbr: 6332252
Technician: JP

Activity Unit: PCI/SA

Multiplier: 1.0651

Analysis Size: 0.2479

Analysis Unit: G

Report Date: 12-DEC-2006 14:25:00.58

First Separation Date: 7-DEC-2006 14:37:00.00

Second Separation Date: 12-DEC-2006 10:35:00.00

Detector ID: 15

Cell ID: FSA

Bkg Date: 12-DEC-2006 08:32:12.48

Bkg Counts: 000010

Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:35:00.26

Counts: 000010

Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKAHW1AC

Isotope: RA-226

Client: STL

Matrix Code: 103

Batch Nbr: 6332252

Activity Unit: PCI/SA

Multiplier: 0.9482

Technician: JP

Analysis Size: 0.2496

Analysis Unit: G

Report Date: 12-DEC-2006 14:43:01.03

First Separation Date: 7-DEC-2006 14:50:00.00

Second Separation Date: 12-DEC-2006 10:53:00.00

Detector ID: 22

Cell ID: NMA

Bkg Date: 12-DEC-2006 08:44:28.91

Bkg Counts: 000010

Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:53:00.50

Counts: 000016

Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKENM1AA Isotope: RA-226
Client: STL Matrix Code: 103
Batch Nbr: 6332252 Activity Unit: PCI/SA Multiplier: 0.9764 /
Technician: JP
Technician: JP
Analysis Size: 1.0 Analysis Unit: G
Report Date: 12-DEC-2006 14:43:01.27
First Separation Date: 7-DEC-2006 14:50:00.00
Second Separation Date: 12-DEC-2006 10:53:00.00
Detector ID: 23 Cell ID: PMA
Bkg Date: 12-DEC-2006 08:32:41.25 Bkg Counts: 000010 Bkg Duration: 000060.0
Count Date: 12-DEC-2006 13:53:00.55 Counts: 000013 Count Duration: 000050.0

End of Report

ALPHA SCINTILLATION REPORT
(Version: 17-Oct-1998)

Sample ID: JKENM1AC

Isotope: RA-226

Client: STL

Matrix Code: 103

Batch Nbr: 6332252
Technician: JP

Activity Unit: PCI/SA

Multiplier: 0.9548

Analysis Size: 1.0

Analysis Unit: G

Report Date: 12-DEC-2006 14:43:01.32

First Separation Date: 7-DEC-2006 14:50:00.00

Second Separation Date: 12-DEC-2006 10:53:00.00

Detector ID: 24

Cell ID: QMC

Bkg Date: 12-DEC-2006 08:32:52.19

Bkg Counts: 000003

Bkg Duration: 000060.0

Count Date: 12-DEC-2006 13:53:00.61

Counts: 000224

Count Duration: 000050.0

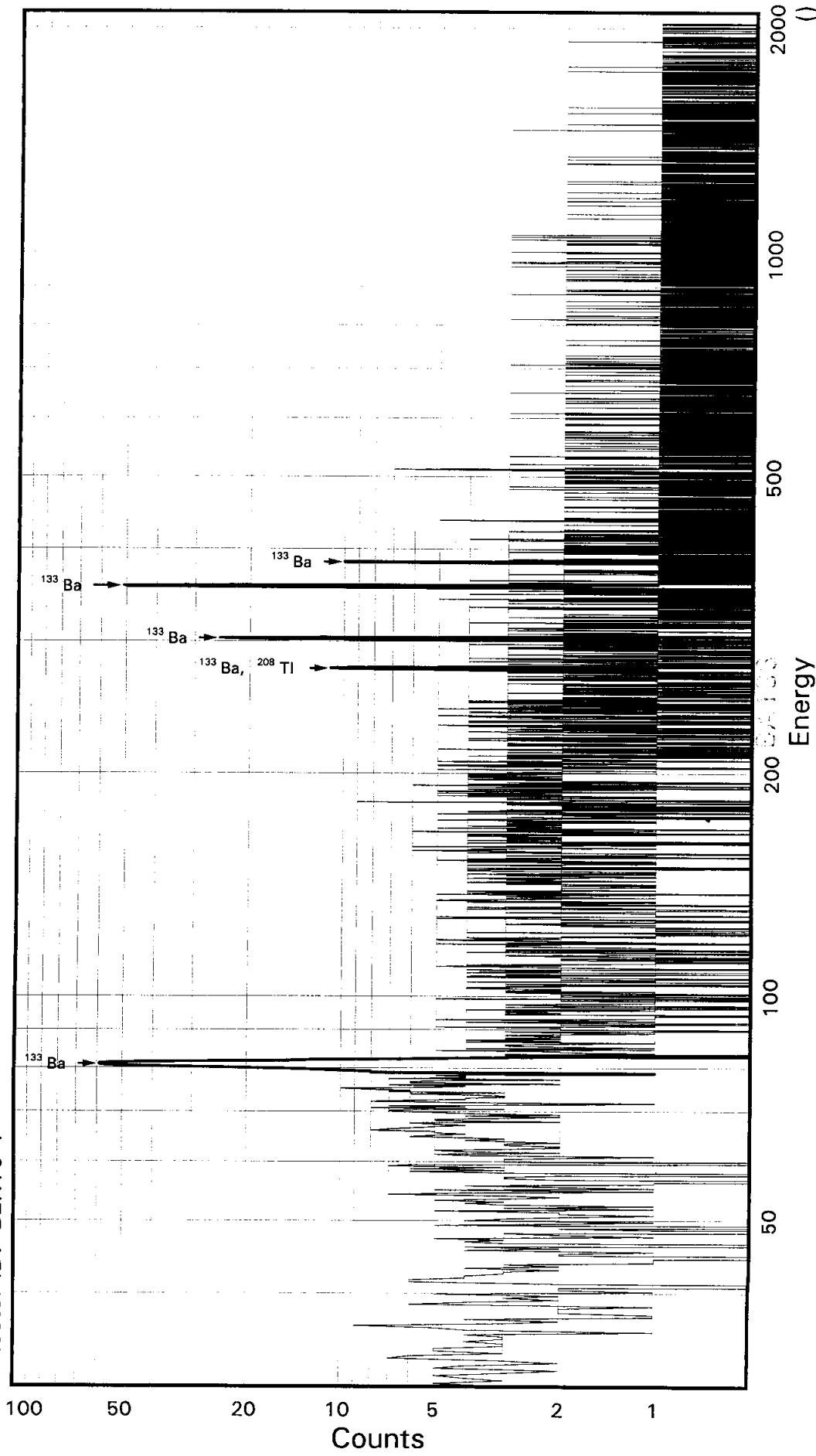
End of Report

STL Richland WA.

BA133

Sample ID: JKAGW1AC
Detector ID: GER10 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 19:54:08.35
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.57221E + 01
Slope: 2.46903E - 01
Quadrature: 4.88894E - 09

SAMPLE IDENTIFICATION: JKAGW1AC

CONFIGURATION ID: GER10:JKAGW1AC_041261954
TITLE : BA133
SAMPLE ID : JKAGW1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 19:54:08
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

ENERGY OFFSET: 1.5722E+01 keV
ENERGY SLOPE: 2.4690E-01 keV/C
ENERGY Q COEFF: 4.8889E-09 keV/C^2
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:59.14
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: 9.2658E-01 keV
FWHM SLOPE: 2.7738E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 4-DEC-2006 20:24:25

Configuration : \$DISK1:[GER10.SAMPLE]JKAGW1AC_041261954.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:08
Sample ID : JKAGW1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Start energy : 18.19 End energy : 2038.68
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.96	362	54	1.36	264.22	254	20	2.01E-01	7.3	
2	0	276.07	95	0	1.78	1054.42	1042	21	5.28E-02	10.3	
3	0	302.90	124	25	1.11	1163.10	1155	17	6.90E-02	12.9	
4	0	356.01	302	44	1.51	1378.17	1365	25	1.68E-01	8.2	
5	0	383.94	42	9	0.81	1491.29	1481	18	2.33E-02	22.8	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER10.SAMPLE]JKAGW1AC 041261954.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:08
 Sample ID : JKAGW1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	362	33.00	2.399E+00	1.522E+03	1.526E+03	9.08
	276.40	95	6.90	2.578E+00	1.780E+03	1.784E+03	11.59
	302.84	124	17.80	2.582E+00	9.014E+02	9.034E+02	13.99
	356.00	302	62.05*	2.584E+00	6.288E+02	6.302E+02	9.83
	383.85	42	8.70	2.584E+00	6.229E+02	6.243E+02	23.40

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAGW1AC

Page : 2
Acquisition date : 4-DEC-2006 19:54:08

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAGW1AC

Page : 3
Acquisition date : 4-DEC-2006 19:54:08

Nuclide	Half-Life			Activity 1-Sigma			
	Half-life	Ratio	Energy	%Abund	(DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.806E+03	11.59	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
			% Abundances Found =		5.44		

Flag: "*" = Keyline

Configuration : \$DISK1:[GER10.SAMPLE]JKAGW1AC_041261954.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8
 Analyses by : MINACT V2.8
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:08
 Sample ID : JKAGW1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
 Peak Width (FWHM) : 3.00 Confidence level : 5.00 %
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	6.302E+02	6.197E+01	5.059E+01	1.012E+00	12.457

---- Non-Identified Nuclides ----

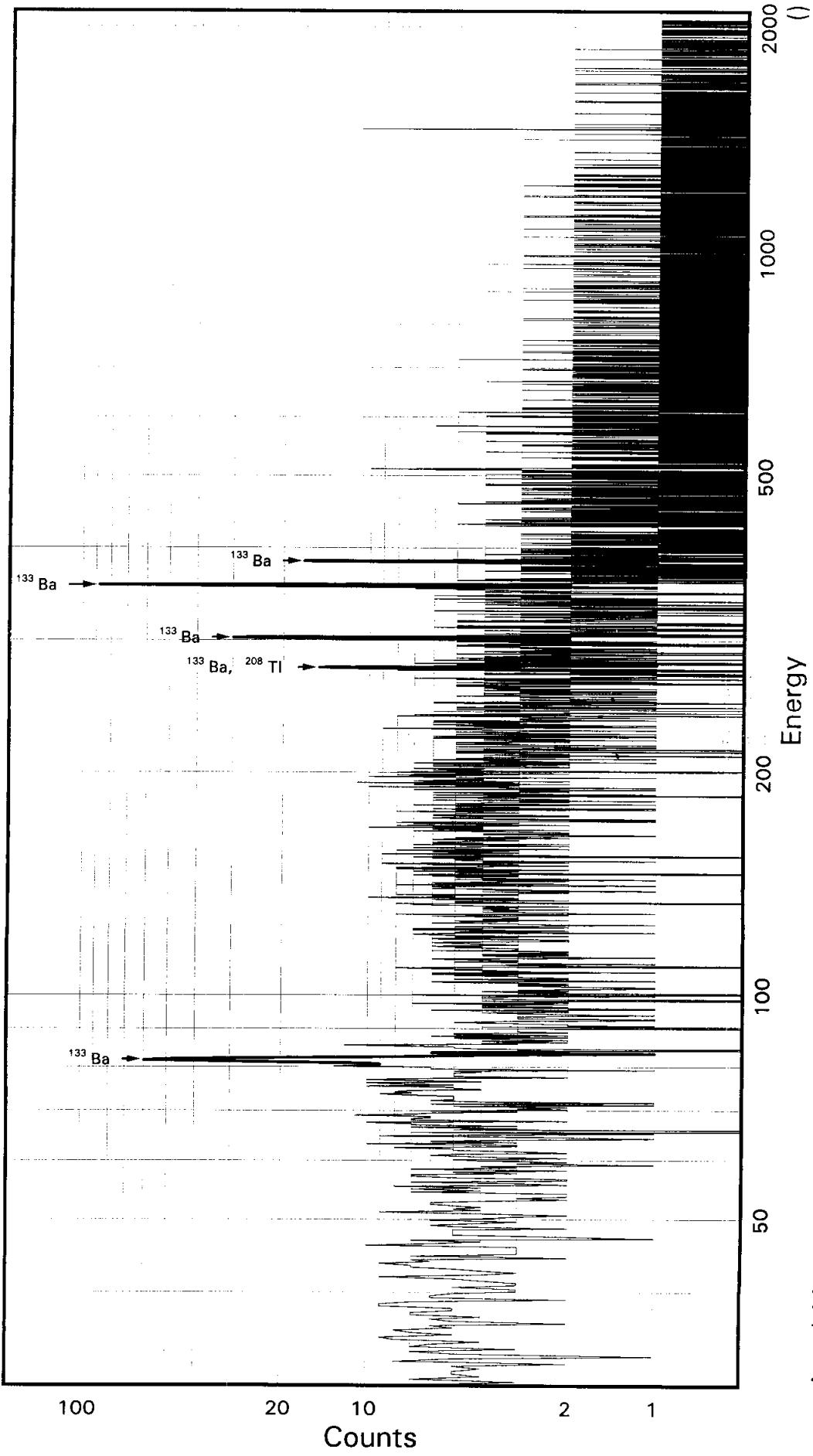
Nuclide	Key-Line		Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
	Activity (DPM/SAMPL)	K.L. Ided				
BE-7	-5.078E+01	7.433E+01	2.641E+02	5.298E+00	-0.192	
NA-22	2.875E+00	3.853E+00	1.803E+01	3.811E-01	0.159	
K-40	-8.281E+01	4.441E+01	1.823E+02	3.901E+00	-0.454	
SC-46	1.384E+00	3.995E+00	1.793E+01	3.749E-01	0.077	
CR-51	8.116E+01	1.025E+02	4.102E+02	8.206E+00	0.198	
MN-54	3.806E+00	4.595E+00	2.039E+01	4.180E-01	0.187	
CO-57	1.593E+02	1.071E+02	4.198E+02	8.662E+00	0.379	
CO-58	-7.290E+00	5.681E+00	1.886E+01	3.860E-01	-0.386	
FE-59	-6.058E+00	8.274E+00	3.106E+01	6.485E-01	-0.195	
CO-60	2.799E+00	3.350E+00	1.650E+01	3.501E-01	0.170	
ZN-65	3.974E+00	7.616E+00	3.462E+01	7.237E-01	0.115	
SE-75	-9.501E+00	1.407E+01	4.922E+01	9.873E-01	-0.193	
SR-85	-4.125E+00	1.171E+01	4.115E+01	8.268E-01	-0.100	
Y-88	-3.011E+00	3.749E+00	1.430E+01	3.133E-01	-0.211	
NB-94	2.393E-01	4.117E+00	1.736E+01	3.569E-01	0.014	
NB-95	5.761E+00	5.247E+00	2.451E+01	5.001E-01	0.235	
TC-95M	9.041E+00	1.929E+01	7.119E+01	1.439E+00	0.127	
ZR-95	-1.710E+01	1.111E+01	3.561E+01	7.260E-01	-0.480	
ZRNB-95	1.068E+01	9.450E+00	4.420E+01	9.018E-01	0.242	
MO-99	-3.800E+02	2.649E+02	8.890E+02	1.831E+01	-0.427	
RH-101	3.908E+01	1.581E+01	6.330E+01	1.281E+00	0.617	
RH-102M	5.598E+00	5.958E+00	2.518E+01	5.050E-01	0.222	
RU-103	-5.648E+00	8.572E+00	3.065E+01	6.154E-01	-0.184	
RU-106DA	2.277E+01	4.980E+01	2.110E+02	4.265E+00	0.108	
AG-108M	-1.503E+01	8.488E+00	2.692E+01	5.391E-01	-0.558	
AG-110M	-1.587E+01	6.229E+00	1.508E+01	3.101E-01	-1.052	
SN-113DA	-2.736E+01	1.038E+01	2.839E+01	5.680E-01	-0.964	

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-7.154E+00		8.147E+00	2.879E+01	5.811E-01	-0.249
SB-125	-1.839E+01		1.901E+01	6.663E+01	1.334E+00	-0.276
SN-126DA	-9.724E+00		4.655E+00	1.324E+01	2.683E-01	-0.735
I-131	2.717E+01		2.411E+01	9.995E+01	1.999E+00	0.272
CS-134	-3.303E+00		3.218E+00	1.148E+01	2.348E-01	-0.288
CS-137DA	9.238E+00		5.343E+00	2.559E+01	5.186E-01	0.361
LA-138	-7.436E+00		5.250E+00	1.698E+01	3.627E-01	-0.438
CE-139	2.049E+00		1.522E+01	5.545E+01	1.131E+00	0.037
BA-140	3.294E+00		3.703E+01	1.520E+02	3.057E+00	0.022
BALa-140	1.690E+01		1.284E+01	6.832E+01	1.475E+00	0.247
LA-140	7.130E+02		5.415E+02	2.882E+03	6.221E+01	0.247
CE-141	-4.567E+00		2.980E+01	1.078E+02	2.216E+00	-0.042
CE-144	1.062E+02		1.002E+02	3.883E+02	8.023E+00	0.273
CEPR-144	2.103E+02		2.002E+02	7.757E+02	1.603E+01	0.271
PM-144	2.864E+00		5.346E+00	2.242E+01	4.531E-01	0.128
PM-146	-6.262E+00		8.850E+00	3.182E+01	6.377E-01	-0.197
EU-152	-4.083E+01		3.222E+01	1.091E+02	2.182E+00	-0.374
EU-154	8.042E+00		1.078E+01	5.044E+01	1.066E+00	0.159
EU-155	-7.798E+01		5.357E+01	1.739E+02	3.658E+00	-0.448
HF-181	-4.663E+00		9.153E+00	3.329E+01	6.678E-01	-0.140
BI-207	1.308E+00		5.655E+00	2.284E+01	4.603E-01	0.057
TL-208	-1.172E+00		5.888E+00	2.318E+01	4.674E-01	-0.051
BI-210M	1.400E-01		1.695E+01	6.213E+01	1.246E+00	0.002
BI-212	1.891E+01		5.318E+01	2.394E+02	7.316E+00	0.079
PB-212	-7.215E+00		2.176E+01	7.725E+01	1.553E+00	-0.093
BI-214	1.528E+01		1.390E+01	6.198E+01	1.252E+00	0.246
PB-214	-1.877E+01		2.737E+01	8.768E+01	1.754E+00	-0.214
RA-223	2.751E+01		6.125E+01	2.221E+02	4.454E+00	0.124
RA-224DA	-7.304E+00		2.203E+01	7.820E+01	1.573E+00	-0.093
RA-226DA	1.516E+01		1.389E+01	6.191E+01	1.250E+00	0.245
AC-227DA	1.248E+01		8.184E+01	3.012E+02	6.058E+00	0.041
AC-228	6.204E-01		1.498E+01	6.286E+01	1.295E+00	0.010
RA-228DA	6.229E-01		1.504E+01	6.312E+01	1.301E+00	0.010
TH-228DA	-3.303E+00		1.659E+01	6.532E+01	1.317E+00	-0.051
TH-232DA	-1.401E+02		6.625E+01	2.071E+02	4.142E+00	-0.677
TH-234DA	1.031E+03		6.841E+02	3.263E+03	6.766E+01	0.316
U-234DA	6.671E+01		4.139E+01	1.718E+02	3.440E+00	0.388
U-235HP	1.168E+02		9.937E+01	3.867E+02	7.953E+00	0.302
NP-237DA	3.601E+01		2.428E+01	9.824E+01	1.966E+00	0.367
U-238DA	-1.877E+01		2.737E+01	8.768E+01	1.754E+00	-0.214
U-238DHP	-5.483E+02		3.890E+02	1.288E+03	2.850E+01	-0.426
AM-241HP	6.335E+01		3.661E+01	1.418E+02	3.161E+00	0.447

STL Richland WA.
BA133
Sample ID: JKAG11AC
Detector ID: GER13 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 19:54:19.12
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.27320E-01
Slope: 2.50826E-01
Quadrature: -1.00155E-07

SAMPLE IDENTIFICATION: JKAG11AC

CONFIGURATION ID: GER13:JKAG11AC_041261954
TITLE : BA133
SAMPLE ID : JKAG11AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 19:54:19
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

ENERGY OFFSET: -.5273E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1002E-06 keV/C^2
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:46:21.53
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: 3.9599E-01 keV
FWHM SLOPE: 4.4844E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 4-DEC-2006 20:24:41

Configuration : \$DISK1:[GER13.SAMPLE]JKAG11AC_041261954.CNF;1
Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:19
Sample ID : JKAG11AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.38 0.0%
Start energy : 19.54 End energy : 2047.52
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.97	180	86	0.77	328.95	323	15	9.98E-02	14.3	
2	0	276.28	70	30	1.02	1104.08	1095	18	3.91E-02	22.1	
3	0	302.82	134	45	1.18	1209.96	1202	19	7.46E-02	15.4	
4	0	355.78	419	36	1.07	1421.35	1414	16	2.33E-01	5.8	
5	0	383.76	71	17	0.82	1533.04	1524	17	3.95E-02	17.8	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER13.SAMPLE]JKAG11AC 041261954.CNF;1
 Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6, NID V3.3
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:19
 Sample ID : JKAG11AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.38 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	180	33.00	2.705E+00	6.712E+02	6.727E+02	15.29
	276.40	70	6.90	2.897E+00	1.172E+03	1.175E+03	22.76
	302.84	134	17.80	2.900E+00	8.674E+02	8.693E+02	16.30
	356.00	419	62.05*	2.903E+00	7.760E+02	7.777E+02	7.94
	383.85	71	8.70	2.902E+00	9.391E+02	9.412E+02	18.59

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAG11AC

Page : 2
Acquisition date : 4-DEC-2006 19:54:19

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAG11AC

Page : 3
Acquisition date : 4-DEC-2006 19:54:19

Nuclide	Half-Life			Activity 1-Sigma			
	Half-life	Ratio	Energy	%Abund	(DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.190E+03	22.76	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
			% Abundances Found =		5.44		

Flag: "*" = Keyline

Configuration : \$DISK1:[GER13.SAMPLE]JKAG11AC_041261954.CNF;1
 Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6, NID V3.3, WTMEAN/KEY V1.8
 Analyses by : MINACT V2.8
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:19
 Sample ID : JKAG11AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.38 0.0%
 Peak Width (FWHM): 3.00 Confidence level : 5.00 %
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.777E+02	6.176E+01	4.899E+01	9.797E-01	15.877

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	1.219E+02		7.405E+01	3.095E+02	6.208E+00	0.394
NA-22	3.704E+00		4.732E+00	2.037E+01	4.296E-01	0.182
K-40	1.013E+01		9.394E+01	4.497E+02	9.601E+00	0.023
SC-46	6.245E+00		6.422E+00	2.829E+01	5.907E-01	0.221
CR-51	-7.548E-01		1.254E+02	4.528E+02	9.059E+00	-0.002
MN-54	4.416E+00		5.402E+00	2.253E+01	4.615E-01	0.196
CO-57	2.597E+02		1.066E+02	4.272E+02	8.805E+00	0.608
CO-58	2.460E+00		6.233E+00	2.494E+01	5.100E-01	0.099
FE-59	-1.606E+01		1.047E+01	3.362E+01	7.011E-01	-0.478
CO-60	8.678E-01		5.039E+00	2.016E+01	4.270E-01	0.043
ZN-65	-1.813E+01		1.147E+01	3.670E+01	7.661E-01	-0.494
SE-75	-1.437E+01		1.737E+01	6.040E+01	1.211E+00	-0.238
SR-85	-4.097E+01		1.173E+01	3.172E+01	6.373E-01	-1.292
Y-88	5.484E+00		3.358E+00	1.792E+01	3.914E-01	0.306
NB-94	3.138E+00		5.460E+00	2.211E+01	4.540E-01	0.142
NB-95	3.469E-01		6.947E+00	2.713E+01	5.532E-01	0.013
TC-95M	-2.057E+01		1.988E+01	6.656E+01	1.345E+00	-0.309
ZR-95	2.819E+00		1.092E+01	4.367E+01	8.899E-01	0.065
ZRNb-95	6.201E-01		1.243E+01	4.855E+01	9.900E-01	0.013
MO-99	5.652E+02		2.626E+02	1.046E+03	2.152E+01	0.540
RH-101	1.311E+01		1.772E+01	6.415E+01	1.298E+00	0.204
RH-102M	-1.126E+01		7.619E+00	2.486E+01	4.986E-01	-0.453
RU-103	1.428E+01		9.478E+00	3.896E+01	7.821E-01	0.367
RU-106DA	-1.323E+01		6.546E+01	2.435E+02	4.921E+00	-0.054
AG-108M	-4.676E+00		8.672E+00	3.085E+01	6.177E-01	-0.152
AG-110M	1.218E+00		7.048E+00	2.801E+01	5.756E-01	0.044
SN-113DA	7.857E+00		1.204E+01	4.706E+01	9.415E-01	0.167

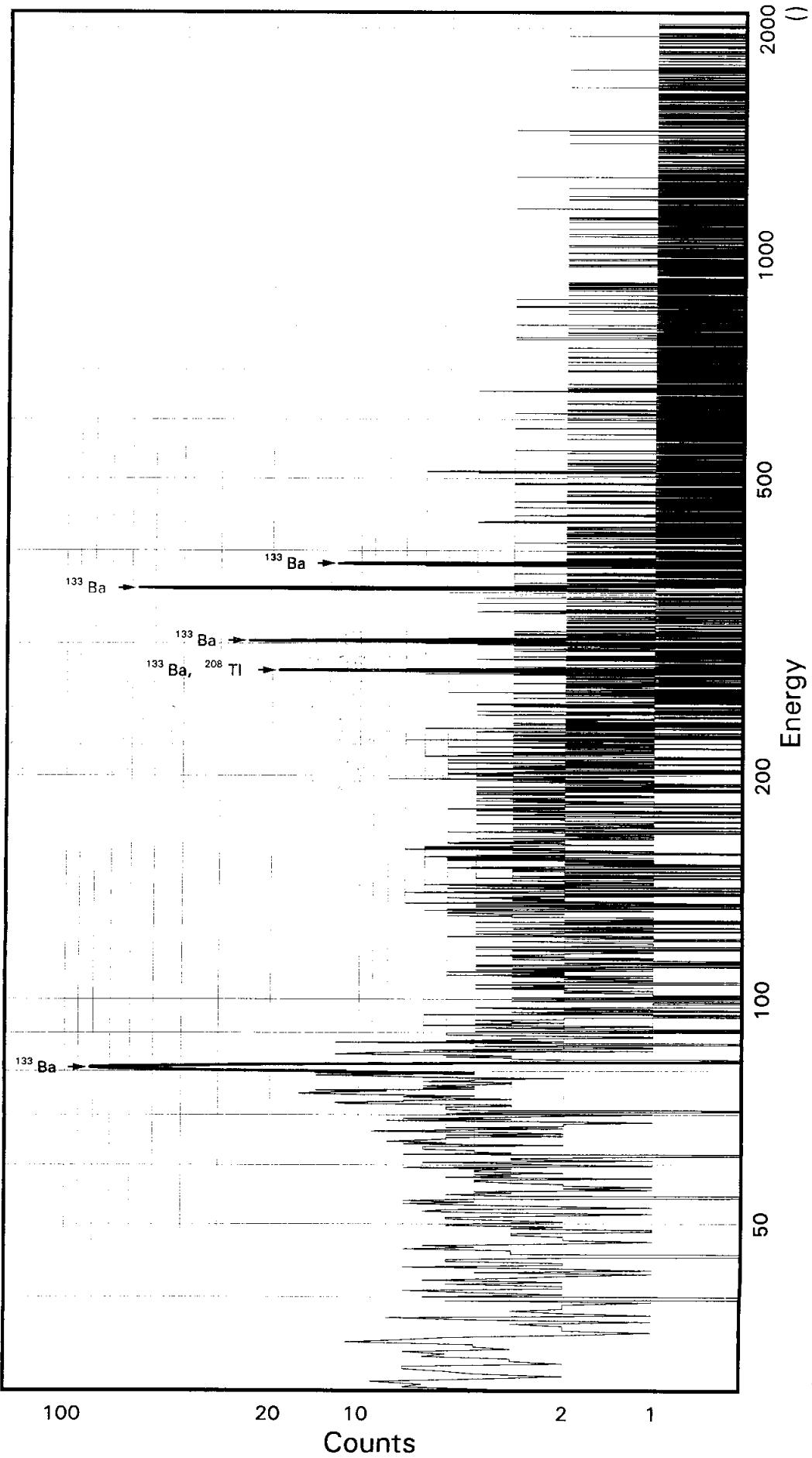
---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	6.933E+00		8.064E+00	3.207E+01	6.472E-01	0.216
SB-125	-3.744E+00		2.512E+01	9.253E+01	1.853E+00	-0.040
SN-126DA	-2.543E+00		6.069E+00	2.210E+01	4.477E-01	-0.115
I-131	3.003E+00		2.681E+01	9.851E+01	1.970E+00	0.030
CS-134	2.880E+00		6.786E+00	2.704E+01	5.525E-01	0.106
CS-137DA	-4.702E+00		6.953E+00	2.476E+01	5.015E-01	-0.190
LA-138	3.016E+00		4.279E+00	2.108E+01	4.495E-01	0.143
CE-139	-2.203E+01		1.420E+01	4.701E+01	9.584E-01	-0.469
BA-140	6.019E+01		4.711E+01	1.981E+02	3.983E+00	0.304
BALA-140	-1.925E-01		1.756E+01	7.123E+01	1.534E+00	-0.003
LA-140	3.968E+02		7.375E+02	3.179E+03	6.846E+01	0.125
CE-141	3.628E+00		2.970E+01	1.085E+02	2.227E+00	0.033
CE-144	3.878E+00		1.137E+02	3.966E+02	8.186E+00	0.010
CEPR-144	6.860E+00		2.273E+02	7.929E+02	1.637E+01	0.009
PM-144	6.014E+00		6.698E+00	2.692E+01	5.439E-01	0.223
PM-146	-7.106E+00		9.480E+00	3.357E+01	6.728E-01	-0.212
EU-152	5.255E+01		3.647E+01	1.401E+02	2.802E+00	0.375
EU-154	1.036E+01		1.324E+01	5.697E+01	1.202E+00	0.182
EU-155	9.929E+00		4.752E+01	1.732E+02	3.636E+00	0.057
HF-181	-1.987E+01		9.741E+00	2.963E+01	5.943E-01	-0.671
BI-207	-2.402E-01		7.141E+00	2.677E+01	5.393E-01	-0.009
TL-208	7.608E+00		8.830E+00	3.674E+01	7.407E-01	0.207
BI-210M	2.850E+01		1.699E+01	6.827E+01	1.369E+00	0.417
BI-212	-3.833E+01		9.384E+01	3.478E+02	1.062E+01	-0.110
PB-212	-1.848E+00		2.342E+01	8.877E+01	1.785E+00	-0.021
BI-214	-1.603E+00		1.743E+01	7.177E+01	1.449E+00	-0.022
PB-214	4.242E+00		3.440E+01	1.091E+02	2.182E+00	0.039
RA-223	-1.105E+02		6.229E+01	2.027E+02	4.063E+00	-0.545
RA-224DA	-1.871E+00		2.371E+01	8.986E+01	1.807E+00	-0.021
RA-226DA	-1.503E+00		1.744E+01	7.181E+01	1.450E+00	-0.021
AC-227DA	-2.128E+02		9.943E+01	3.050E+02	6.133E+00	-0.698
AC-228	-3.278E+01		1.953E+01	7.428E+01	1.529E+00	-0.441
RA-228DA	-3.292E+01		1.961E+01	7.458E+01	1.536E+00	-0.441
TH-228DA	2.144E+01		2.488E+01	1.035E+02	2.087E+00	0.207
TH-232DA	-8.408E+01		7.674E+01	2.577E+02	5.155E+00	-0.326
TH-234DA	5.562E+02		5.473E+02	2.578E+03	5.341E+01	0.216
U-234DA	6.693E+01		5.196E+01	2.042E+02	4.089E+00	0.328
U-235HP	-9.956E+01		1.024E+02	3.549E+02	7.293E+00	-0.281
NP-237DA	2.783E+01		2.597E+01	9.906E+01	1.982E+00	0.281
U-238DA	4.242E+00		3.440E+01	1.091E+02	2.182E+00	0.039
U-238DHP	9.843E+01		2.883E+02	1.080E+03	2.381E+01	0.091
AM-241HP	-2.771E+01		2.964E+01	9.827E+01	2.183E+00	-0.282

STL Richland WA.
BA133

Sample ID: JKAG41AC
Detector ID: GER6 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 19:54:30.25
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.69196E-01
Slope: 2.49381E-01
Quadrature: 1.77235E-08

SAMPLE IDENTIFICATION: JKAG41AC

CONFIGURATION ID: GER6:JKAG41AC_041261954
TITLE : BA133
SAMPLE ID : JKAG41AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 19:54:30
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

ENERGY OFFSET: 1.6920E-01 keV
ENERGY SLOPE: 2.4938E-01 keV/C
ENERGY Q COEFF: 1.7724E-08 keV/C^2
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:25.19
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: 1.1281E-01 keV
FWHM SLOPE: 6.8184E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 4-DEC-2006 20:24:57

Configuration : \$DISK1:[GER6.SAMPLE]JKAG41AC_041261954.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:30
Sample ID : JKAG41AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
Start energy : 20.12 End energy : 2044.28
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.96	374	31	0.93	323.96	318	13	2.08E-01	6.1	
2	0	276.40		53	3	1107.60	1101	12	2.96E-02	15.1	
3	0	302.90		118	9	1213.81	1205	18	6.53E-02	11.0	
4	0	355.93		337	10	1426.44	1417	20	1.87E-01	5.9	
5	1	382.76		34	0	1534.00	1527	18	1.89E-02	21.5	3.00E+00
6	1	384.26		54	0	1540.00	1527	18	2.98E-02	14.9	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER6.SAMPLE]JKAG41AC_041261954.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:30
 Sample ID : JKAG41AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	374	33.00	2.167E+00	1.742E+03	1.746E+03	8.19
	276.40	53	6.90	2.334E+00	1.103E+03	1.106E+03	16.06
	302.84	118	17.80	2.337E+00	9.417E+02	9.438E+02	12.23
	356.00	337	62.05*	2.339E+00	7.741E+02	7.758E+02	8.00
	383.85	54	8.70	2.338E+00	8.794E+02	8.813E+02	15.85

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAG41AC

Page : 2
Acquisition date : 4-DEC-2006 19:54:30

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
1	382.76	34	0	1.45	1534.00	1527	18	1.89E-02	21.5	2.34E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAG41AC

Page : 3
Acquisition date : 4-DEC-2006 19:54:30

Nuclide	Half-Life			Activity 1-Sigma			
	Half-life	Ratio	Energy	%Abund	(DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.120E+03	16.06	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
			% Abundances Found =		5.44		

Flag: "*" = Keyline

Configuration : \$DISK1:[GER6.SAMPLE]JKAG41AC_041261954.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8
 Analyses by : MINACT V2.8
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 19:54:30
 Sample ID : JKAG41AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.24 0.0%
 Peak Width (FWHM) : 3.00 Confidence level : 5.00 %
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.758E+02	6.204E+01	5.149E+01	1.030E+00	15.066

---- Non-Identified Nuclides ----

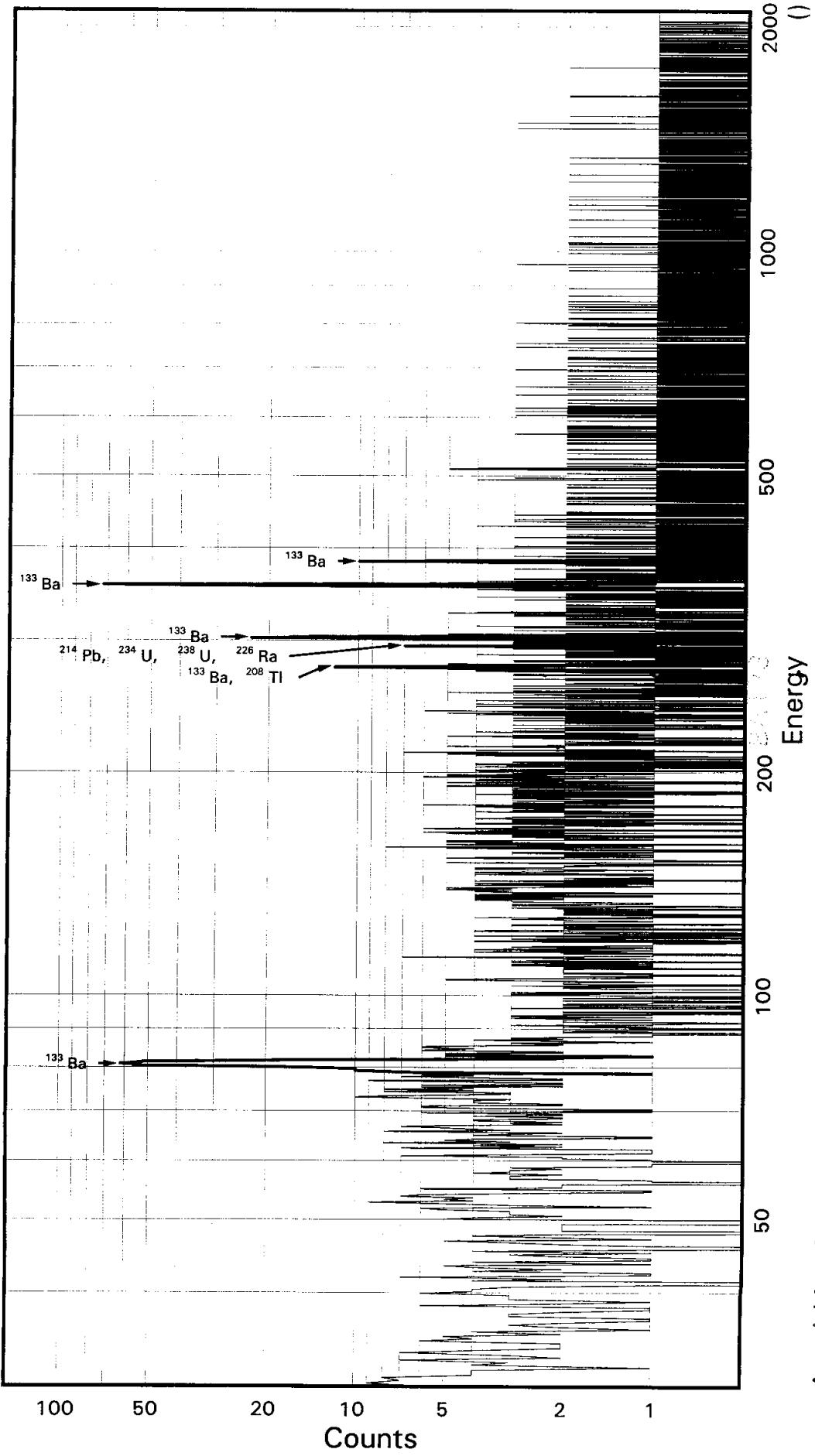
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	5.747E+01		6.973E+01	2.950E+02	5.918E+00	0.195
NA-22	-1.653E+00		4.080E+00	1.638E+01	3.467E-01	-0.101
K-40	5.125E+01		6.540E+01	3.364E+02	7.213E+00	0.152
SC-46	-3.641E+00		5.825E+00	2.165E+01	4.532E-01	-0.168
CR-51	-5.981E+01		9.892E+01	3.580E+02	7.163E+00	-0.167
MN-54	-8.416E+00		5.879E+00	1.969E+01	4.038E-01	-0.428
CO-57	2.290E+02		1.001E+02	4.115E+02	8.498E+00	0.557
CO-58	-5.265E+00		5.077E+00	1.782E+01	3.649E-01	-0.295
FE-59	1.572E+01		1.162E+01	5.319E+01	1.112E+00	0.296
CO-60	3.042E+00		2.158E+00	1.411E+01	3.000E-01	0.216
ZN-65	1.471E+01		1.107E+01	5.054E+01	1.058E+00	0.291
SE-75	8.420E+00		1.578E+01	6.044E+01	1.213E+00	0.139
SR-85	-3.124E+01		1.039E+01	2.859E+01	5.746E-01	-1.093
Y-88	-3.461E+00		2.455E+00	4.613E+00	1.013E-01	-0.750
NB-94	9.672E+00		4.778E+00	2.391E+01	4.917E-01	0.405
NB-95	5.559E+00		6.720E+00	2.949E+01	6.020E-01	0.188
TC-95M	-6.080E+00		1.864E+01	6.778E+01	1.370E+00	-0.090
ZR-95	1.207E+01		1.125E+01	5.004E+01	1.021E+00	0.241
ZRNB-95	9.948E+00		1.203E+01	5.278E+01	1.077E+00	0.188
MO-99	1.340E+02		2.697E+02	1.029E+03	2.122E+01	0.130
RH-101	-4.970E+00		1.652E+01	5.764E+01	1.167E+00	-0.086
RH-102M	3.397E+00		6.318E+00	2.633E+01	5.281E-01	0.129
RU-103	-6.363E+00		8.538E+00	3.105E+01	6.233E-01	-0.205
RU-106DA	-1.751E+00		5.570E+01	2.234E+02	4.518E+00	-0.008
AG-108M	-2.902E+01		1.039E+01	2.926E+01	5.860E-01	-0.992
AG-110M	-1.992E+00		6.241E+00	2.510E+01	5.167E-01	-0.079
SN-113DA	-3.076E+01		1.117E+01	2.997E+01	5.996E-01	-1.026

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-5.513E+00		7.196E+00	2.616E+01	5.282E-01	-0.211
SB-125	1.238E+01		2.559E+01	1.008E+02	2.019E+00	0.123
SN-126DA	-1.668E+00		5.679E+00	2.174E+01	4.408E-01	-0.077
I-131	2.006E-01		2.290E+01	9.016E+01	1.803E+00	0.002
CS-134	6.763E+00		6.033E+00	2.737E+01	5.600E-01	0.247
CS-137DA	7.777E+00		7.419E+00	3.164E+01	6.412E-01	0.246
LA-138	-7.016E+00		6.121E+00	2.122E+01	4.541E-01	-0.331
CE-139	-1.557E+01		1.383E+01	4.696E+01	9.585E-01	-0.332
BA-140	-2.258E+01		3.220E+01	1.215E+02	2.445E+00	-0.186
BALA-140	2.521E+01		1.268E+01	7.564E+01	1.636E+00	0.333
LA-140	1.063E+03		5.348E+02	3.191E+03	6.902E+01	0.333
CE-141	-9.350E+00		2.530E+01	9.283E+01	1.909E+00	-0.101
CE-144	-1.685E+02		1.116E+02	3.569E+02	7.381E+00	-0.472
CEPR-144	-3.301E+02		2.235E+02	7.170E+02	1.483E+01	-0.460
PM-144	1.188E-01		5.537E+00	2.233E+01	4.514E-01	0.005
PM-146	-5.489E+00		7.793E+00	2.847E+01	5.707E-01	-0.193
EU-152	-3.027E+01		3.262E+01	1.119E+02	2.239E+00	-0.270
EU-154	-4.623E+00		1.141E+01	4.583E+01	9.699E-01	-0.101
EU-155	-5.034E+01		4.585E+01	1.575E+02	3.317E+00	-0.320
HF-181	2.649E+00		8.584E+00	3.519E+01	7.060E-01	0.075
BI-207	-5.168E+00		6.592E+00	2.332E+01	4.700E-01	-0.222
TL-208	-7.131E-01		7.700E+00	2.992E+01	6.035E-01	-0.024
BI-210M	6.515E+00		1.736E+01	6.586E+01	1.321E+00	0.099
BI-212	1.352E+02		9.321E+01	4.148E+02	1.268E+01	0.326
PB-212	-5.165E+01		2.156E+01	6.732E+01	1.354E+00	-0.767
BI-214	8.668E+00		1.422E+01	6.054E+01	1.223E+00	0.143
PB-214	3.724E+01		2.634E+01	9.532E+01	1.906E+00	0.391
RA-223	-9.557E+01		6.392E+01	2.058E+02	4.127E+00	-0.464
RA-224DA	-5.229E+01		2.182E+01	6.815E+01	1.371E+00	-0.767
RA-226DA	8.669E+00		1.422E+01	6.054E+01	1.223E+00	0.143
AC-227DA	1.007E+02		7.595E+01	3.097E+02	6.230E+00	0.325
AC-228	2.104E+01		2.380E+01	9.981E+01	2.059E+00	0.211
RA-228DA	2.112E+01		2.390E+01	1.002E+02	2.067E+00	0.211
TH-228DA	-2.009E+00		2.170E+01	8.432E+01	1.701E+00	-0.024
TH-232DA	7.884E+01		5.833E+01	2.456E+02	4.912E+00	0.321
TH-234DA	1.405E+03		1.012E+03	4.431E+03	9.198E+01	0.317
U-234DA	5.125E+01		4.429E+01	1.799E+02	3.602E+00	0.285
U-235HP	2.605E+01		9.570E+01	3.637E+02	7.485E+00	0.072
NP-237DA	-7.242E-01		2.287E+01	8.588E+01	1.719E+00	-0.008
U-238DA	3.724E+01		2.634E+01	9.532E+01	1.906E+00	0.391
U-238DHP	-1.051E+02		3.591E+02	1.316E+03	2.920E+01	-0.080
AM-241HP	3.038E+01		3.028E+01	1.193E+02	2.667E+00	0.255

STL Richland WA.
BA1133
Sample ID: JKAG71AC
Detector ID: GER10 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:30:10.43
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.57221E+01
Slope: 2.46903E-01
Quadrature: 4.88894E-09

SAMPLE IDENTIFICATION: JKAG71AC

CONFIGURATION ID: GER10:JKAG71AC_041262030
TITLE : BA133
SAMPLE ID : JKAG71AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:30:10
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

ENERGY OFFSET: 1.5722E+01 keV
ENERGY SLOPE: 2.4690E-01 keV/C
ENERGY Q COEFF: 4.8889E-09 keV/C²
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:59.14
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: 9.2658E-01 keV
FWHM SLOPE: 2.7738E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 4-DEC-2006 21:00:27

Configuration : \$DISK1:[GER10.SAMPLE]JKAG71AC_041262030.CNF;1
 Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:10
 Sample ID : JKAG71AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
 Start energy : 18.19 End energy : 2038.68
 Sensitivity : 5.00 Gaussian : 10.00
 Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.83	348	58	1.33	263.70	254	19	1.93E-01	7.6	
2	0	276.79	43	45	1.07	1057.35	1045	20	2.40E-02	41.0	
3	0	295.47	30	12	0.50	1133.00	1121	23	1.64E-02	35.1	
4	0	303.09	98	36	1.31	1163.88	1153	17	5.44E-02	17.0	
5	0	355.99	375	16	0.98	1378.09	1367	22	2.08E-01	5.9	
6	0	383.56	50	5	1.11	1489.76	1479	19	2.77E-02	17.6	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER10.SAMPLE]JKAG71AC 041262030.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:10
 Sample ID : JKAG71AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	348	33.00	2.398E+00	1.464E+03	1.467E+03	9.36
	276.40	43	6.90	2.578E+00	8.086E+02	8.104E+02	41.34
	302.84	98	17.80	2.582E+00	7.107E+02	7.123E+02	17.86
	356.00	375	62.05*	2.584E+00	7.793E+02	7.810E+02	7.96
	383.85	50	8.70	2.584E+00	7.403E+02	7.420E+02	18.45

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAG71AC

Page : 2
Acquisition date : 4-DEC-2006 20:30:10

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	295.47	30		12	0.50	1133.00	1121	23	1.64E-02	35.1	2.58E+00 T

Flags: "T" = Tentatively associated

Nuclide	Half-Life			Activity 1-Sigma			
	Half-life	Ratio	Energy	%Abund	(DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	8.205E+02	41.34	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
			% Abundances	Found =	5.44		
PB-214	4.47E+09Y	0.00	241.98	7.49	---	Not Found	---
			295.21	19.20	1.984E+02	35.50	Abun.
			351.92*	37.20	---	Not Found	---
			785.91	1.10	---	Not Found	---
			% Abundances	Found =	29.54		
RA-226DA	1600.00Y	0.00	186.21	3.50	---	Not Found	---
			241.98	7.49	---	Not Found	---
			295.22	19.20	1.984E+02	35.50	Abun.
			351.92	37.20	---	Not Found	---
			609.32*	46.30	---	Not Found	---
			1120.28	15.10	---	Not Found	---
			1238.11	5.94	---	Not Found	---
			1764.49	15.80	---	Not Found	---
			% Abundances	Found =	12.75		
U-234DA	4.47E+09Y	0.00	241.98	7.49	---	Not Found	---
			295.22*	19.20	1.984E+02	35.50	Abun.
			351.92	37.20	---	Not Found	---
			609.31	46.30	---	Not Found	---
			% Abundances	Found =	17.42		
U-238DA	4.47E+09Y	0.00	241.98	7.49	---	Not Found	---
			295.22	19.20	1.984E+02	35.50	Abun.
			351.92*	37.20	---	Not Found	---
			609.31	46.30	---	Not Found	---
			% Abundances	Found =	17.42		

Flag: "*" = Keyline

Configuration : \$DISK1:[GER10.SAMPLE]JKAG71AC 041262030.CNF;1
 Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6, NID V3.3, WTMEAN/KEY V1.8
 Analyses by : MINACT V2.8
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:10
 Sample ID : JKAG71AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
 Peak Width (FWHM) : 3.00 Confidence level : 5.00 %
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.810E+02	6.213E+01	6.152E+01	1.230E+00	12.695

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.202E+02		6.746E+01	2.087E+02	4.186E+00	-0.576
NA-22	-3.926E+00		3.571E+00	1.277E+01	2.699E-01	-0.307
K-40	2.082E+01		5.117E+01	2.433E+02	5.207E+00	0.086
SC-46	7.434E+00		3.987E+00	2.106E+01	4.403E-01	0.353
CR-51	5.398E+00		1.017E+02	3.876E+02	7.754E+00	0.014
MN-54	4.570E+00		5.114E+00	2.222E+01	4.555E-01	0.206
CO-57	1.207E+01		1.163E+02	4.245E+02	8.758E+00	0.028
CO-58	8.865E+00		4.805E+00	2.376E+01	4.863E-01	0.373
FE-59	-3.172E+00		8.762E+00	3.467E+01	7.239E-01	-0.092
CO-60	1.475E+00		4.091E+00	1.801E+01	3.821E-01	0.082
ZN-65	-1.414E+01		7.466E+00	2.023E+01	4.229E-01	-0.699
SE-75	1.167E+01		1.244E+01	5.022E+01	1.007E+00	0.232
SR-85	-2.376E+01		1.196E+01	3.718E+01	7.470E-01	-0.639
Y-88	3.100E+00		3.078E+00	1.658E+01	3.632E-01	0.187
NB-94	1.405E+00		3.895E+00	1.725E+01	3.545E-01	0.081
NB-95	6.488E+00		6.375E+00	2.804E+01	5.720E-01	0.231
TC-95M	1.137E+01		1.777E+01	6.680E+01	1.350E+00	0.170
ZR-95	-2.233E+01		7.985E+00	7.348E+00	1.498E-01	-3.038
ZRNB-95	1.161E+01		1.141E+01	5.016E+01	1.023E+00	0.231
MO-99	3.835E+02		2.866E+02	1.108E+03	2.282E+01	0.346
RH-101	2.108E+01		1.671E+01	6.330E+01	1.281E+00	0.333
RH-102M	8.836E+00		5.671E+00	2.546E+01	5.106E-01	0.347
RU-103	1.110E+00		8.047E+00	3.149E+01	6.322E-01	0.035
RU-106DA	-7.848E+01		6.332E+01	2.159E+02	4.363E+00	-0.364
AG-108M	-4.011E+00		6.709E+00	2.437E+01	4.880E-01	-0.165
AG-110M	5.799E+00		4.968E+00	2.478E+01	5.097E-01	0.234
SN-113DA	1.051E+01		1.150E+01	4.668E+01	9.340E-01	0.225

---- Non-Identified Nuclides ----

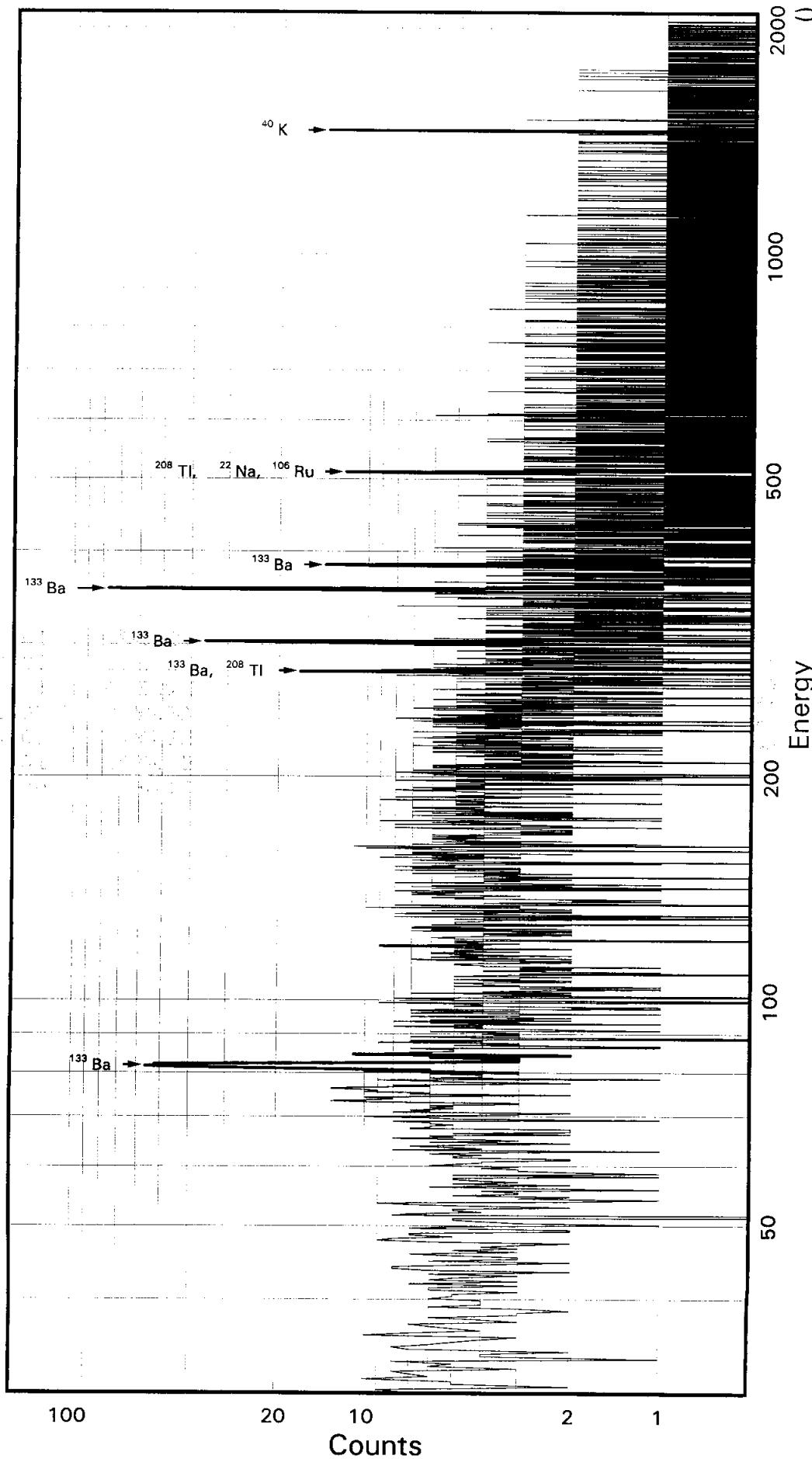
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-1.163E+00		7.568E+00	2.879E+01	5.813E-01	-0.040
SB-125	4.366E+01		2.099E+01	9.436E+01	1.889E+00	0.463
SN-126DA	1.629E-02		4.526E+00	1.843E+01	3.736E-01	0.001
I-131	-4.141E+00		3.125E+01	1.147E+02	2.293E+00	-0.036
CS-134	1.782E+00		4.841E+00	2.093E+01	4.279E-01	0.085
CS-137DA	-2.353E+00		4.959E+00	1.923E+01	3.895E-01	-0.122
LA-138	-4.139E+00		4.142E+00	1.519E+01	3.245E-01	-0.273
CE-139	-2.213E+00		1.555E+01	5.577E+01	1.138E+00	-0.040
BA-140	-3.166E+01		3.485E+01	1.275E+02	2.565E+00	-0.248
BALa-140	-6.043E+00		1.008E+01	4.191E+01	9.046E-01	-0.144
LA-140	9.644E+01		3.828E+02	2.003E+03	4.325E+01	0.048
CE-141	-1.396E+01		2.759E+01	9.836E+01	2.021E+00	-0.142
CE-144	1.857E+01		1.004E+02	3.726E+02	7.699E+00	0.050
CEPR-144	3.611E+01		2.007E+02	7.448E+02	1.539E+01	0.048
PM-144	-3.673E+00		6.930E+00	2.533E+01	5.119E-01	-0.145
PM-146	1.654E+00		7.811E+00	3.161E+01	6.336E-01	0.052
EU-152	1.762E+01		2.694E+01	1.073E+02	2.146E+00	0.164
EU-154	-1.098E+01		9.990E+00	3.572E+01	7.550E-01	-0.307
EU-155	4.383E+01		4.751E+01	1.819E+02	3.826E+00	0.241
HF-181	9.145E+00		8.006E+00	3.467E+01	6.956E-01	0.264
BI-207	1.795E+00		6.000E+00	2.412E+01	4.861E-01	0.074
TL-208	5.147E+00		7.627E+00	3.105E+01	6.262E-01	0.166
BI-210M	-2.586E+01		1.538E+01	4.867E+01	9.762E-01	-0.531
BI-212	-9.928E+00		7.959E+01	3.103E+02	9.482E+00	-0.032
PB-212	1.774E+00		2.195E+01	7.992E+01	1.607E+00	0.022
BI-214	1.647E+01		1.606E+01	6.842E+01	1.382E+00	0.241
PB-214	4.471E+01		2.379E+01	9.707E+01	1.941E+00	0.461
RA-223	-2.751E+01		5.700E+01	2.028E+02	4.067E+00	-0.136
RA-224DA	1.796E+00		2.222E+01	8.090E+01	1.627E+00	0.022
RA-226DA	1.670E+01		1.608E+01	6.854E+01	1.384E+00	0.244
AC-227DA	-8.643E+00		7.863E+01	2.856E+02	5.746E+00	-0.030
AC-228	3.722E-01		1.160E+01	5.162E+01	1.064E+00	0.007
RA-228DA	3.737E-01		1.165E+01	5.183E+01	1.068E+00	0.007
TH-228DA	1.450E+01		2.149E+01	8.750E+01	1.068E+00	0.007
TH-232DA	-1.319E+02		5.496E+01	1.622E+02	3.245E+00	0.166
TH-234DA	1.462E+00		4.108E+02	1.909E+03	3.960E+01	-0.813
U-234DA	1.984E+02	+	7.044E+01	1.981E+02	3.966E+00	1.002
U-235HP	-2.042E+02		9.890E+01	3.161E+02	6.501E+00	-0.646
NP-237DA	1.887E+01		2.072E+01	8.351E+01	1.671E+00	0.226
U-238DA	4.471E+01		2.379E+01	9.707E+01	1.941E+00	0.461
U-238DHP	-2.504E+02		3.657E+02	1.262E+03	2.792E+01	-0.198
AM-241HP	-1.634E+01		3.178E+01	1.121E+02	2.499E+00	-0.146

STL Richland WA.

BA133

Sample ID: JKAHM1AC
Detector ID: GER13 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:30:24.05
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -5.27320E-01
Slope: 2.50826E-01
Quadrature: -1.00155E-07

SAMPLE IDENTIFICATION: JKAHM1AC

CONFIGURATION ID: GER13:JKAHM1AC_041262030
TITLE : BA133
SAMPLE ID : JKAHM1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:30:24
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

ENERGY OFFSET: -.5273E+00 keV
ENERGY SLOPE: 2.5083E-01 keV/C
ENERGY Q COEFF: -.1002E-06 keV/C[^]2
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:46:21.53
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: 3.9599E-01 keV
FWHM SLOPE: 4.4844E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 4-DEC-2006 21:00:43

Configuration : \$DISK1:[GER13.SAMPLE]JKAHM1AC 041262030.CNF;1
Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:24
Sample ID : JKAHM1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.39 0.0%
Start energy : 19.54 End energy : 2047.52
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.92	196	108	1.07	328.77	321	19	1.09E-01	14.5	
2	0	276.54		69	0.66	1105.09	1098	18	3.84E-02	22.7	
3	0	302.57		168	32	1.20	1209.00	1201	16	9.33E-02	10.8
4	0	355.76		399	38	1.17	1421.28	1410	22	2.21E-01	6.4
5	0	383.58		72	23	1.95	1532.31	1524	15	3.97E-02	18.7
6	0	511.12*		6	23	1.48	2041.52	2033	22	3.37E-03	260.2
7	5	1458.96		16	2	2.07	5832.30	5828	22	8.78E-03	25.5
8	5	1461.16*		5	2	1.84	5841.13	5828	22	2.93E-03	171.6

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER13.SAMPLE]JKAHM1AC_041262030.CNF;1
 Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6, NID V3.3
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:24
 Sample ID : JKAHM1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.39 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: NP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
K-40	1460.81	5	10.67*	2.719E+00	6.052E+01	6.052E+01	171.66

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	196	33.00	2.704E+00	7.307E+02	7.324E+02	15.45
	276.40	69	6.90	2.897E+00	1.152E+03	1.154E+03	23.28
	302.84	168	17.80	2.900E+00	1.085E+03	1.087E+03	12.05
	356.00	399	62.05*	2.903E+00	7.376E+02	7.393E+02	8.36
	383.85	72	8.70	2.902E+00	9.439E+02	9.460E+02	19.44

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAHM1AC

Page : 2

Acquisition date : 4-DEC-2006 20:30:24

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	511.12	6	23	1.48	2041.52	2033	22	3.37E-03	****	2.89E+00	T
5	1458.96	16		2	2.07	5832.30	5828	22	8.78E-03	25.5	2.72E+00

Flags: "T" = Tentatively associated

Nuclide	Half-Life			Activity 1-Sigma			
	Half-life	Ratio	Energy	%Abund	(DPM/SAMPL)	%Error	Rejected by
NA-22	2.60Y	0.01	511.00	179.68	3.932E+00	260.21	Abun.
			1274.54*	99.94	---	Not Found	---
			% Abundances	Found =	64.26		
RU-106DA	368.20D	0.03	511.85	20.60	3.479E+01	260.21	Abun.
			621.84*	9.80	---	Not Found	---
			% Abundances	Found =	67.76		
TL-208	1.41E+10Y	0.00	277.35	6.80	1.169E+03	23.28	Abun.
			510.84	21.60	3.242E+01	260.21	
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
			% Abundances	Found =	22.71		

Flag: "*" = Keyline

Configuration : \$DISK1:[GER13.SAMPLE]JKAHM1AC 041262030.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8
 Analyses by : MINACT V2.8
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:24
 Sample ID : JKAHM1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.39 0.0%
 Peak Width (FWHM) : 3.00 Confidence level : 5.00 %
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
K-40	6.052E+01	1.039E+02	1.222E+02	2.610E+00	0.495
BA-133	7.393E+02	6.178E+01	6.190E+01	1.238E+00	11.943

---- Non-Identified Nuclides ----

Nuclide	Key-Line		Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
	Activity (DPM/SAMPL)	K.L. Ided				
BE-7	-9.847E+01	6.610E+01	2.147E+02	4.306E+00	-0.459	
NA-22	5.611E+00	4.669E+00	2.089E+01	4.408E-01	0.269	
SC-46	2.989E+00	5.076E+00	2.356E+01	4.919E-01	0.127	
CR-51	9.086E+01	1.186E+02	4.504E+02	9.012E+00	0.202	
MN-54	-3.782E+00	5.309E+00	1.917E+01	3.926E-01	-0.197	
CO-57	-3.431E+02	1.042E+02	3.099E+02	6.389E+00	-1.107	
CO-58	-1.621E+01	6.295E+00	1.726E+01	3.529E-01	-0.939	
FE-59	-8.385E+00	1.073E+01	3.846E+01	8.019E-01	-0.218	
CO-60	3.613E+00	3.685E+00	1.721E+01	3.644E-01	0.210	
ZN-65	-3.452E-02	1.060E+01	4.120E+01	8.601E-01	-0.001	
SE-75	-1.567E+01	1.730E+01	5.987E+01	1.201E+00	-0.262	
SR-85	1.536E+01	9.851E+00	3.539E+01	7.109E-01	0.434	
Y-88	2.757E-02	2.722E+00	1.269E+01	2.773E-01	0.002	
NB-94	-6.641E+00	4.614E+00	1.501E+01	3.081E-01	-0.443	
NB-95	9.399E-01	7.318E+00	2.854E+01	5.820E-01	0.033	
TC-95M	2.105E+01	2.069E+01	7.620E+01	1.540E+00	0.276	
ZR-95	-5.052E+00	1.459E+01	5.345E+01	1.089E+00	-0.095	
ZRNB-95	1.360E+00	1.306E+01	5.086E+01	1.037E+00	0.027	
MO-99	1.851E+02	2.814E+02	1.052E+03	2.164E+01	0.176	
RH-101	1.104E+01	1.484E+01	5.474E+01	1.107E+00	0.202	
RH-102M	8.168E+00	7.326E+00	2.938E+01	5.891E-01	0.278	
RU-103	-7.698E+00	9.341E+00	3.236E+01	6.496E-01	-0.238	
RU-106DA	-2.166E+01	5.992E+01	2.221E+02	4.487E+00	-0.098	
AG-108M	4.406E-01	9.038E+00	3.332E+01	6.672E-01	0.013	
AG-110M	1.103E+00	7.835E+00	3.049E+01	6.265E-01	0.036	
SN-113DA	-2.216E+00	1.368E+01	5.010E+01	1.002E+00	-0.044	

---- Non-Identified Nuclides ----

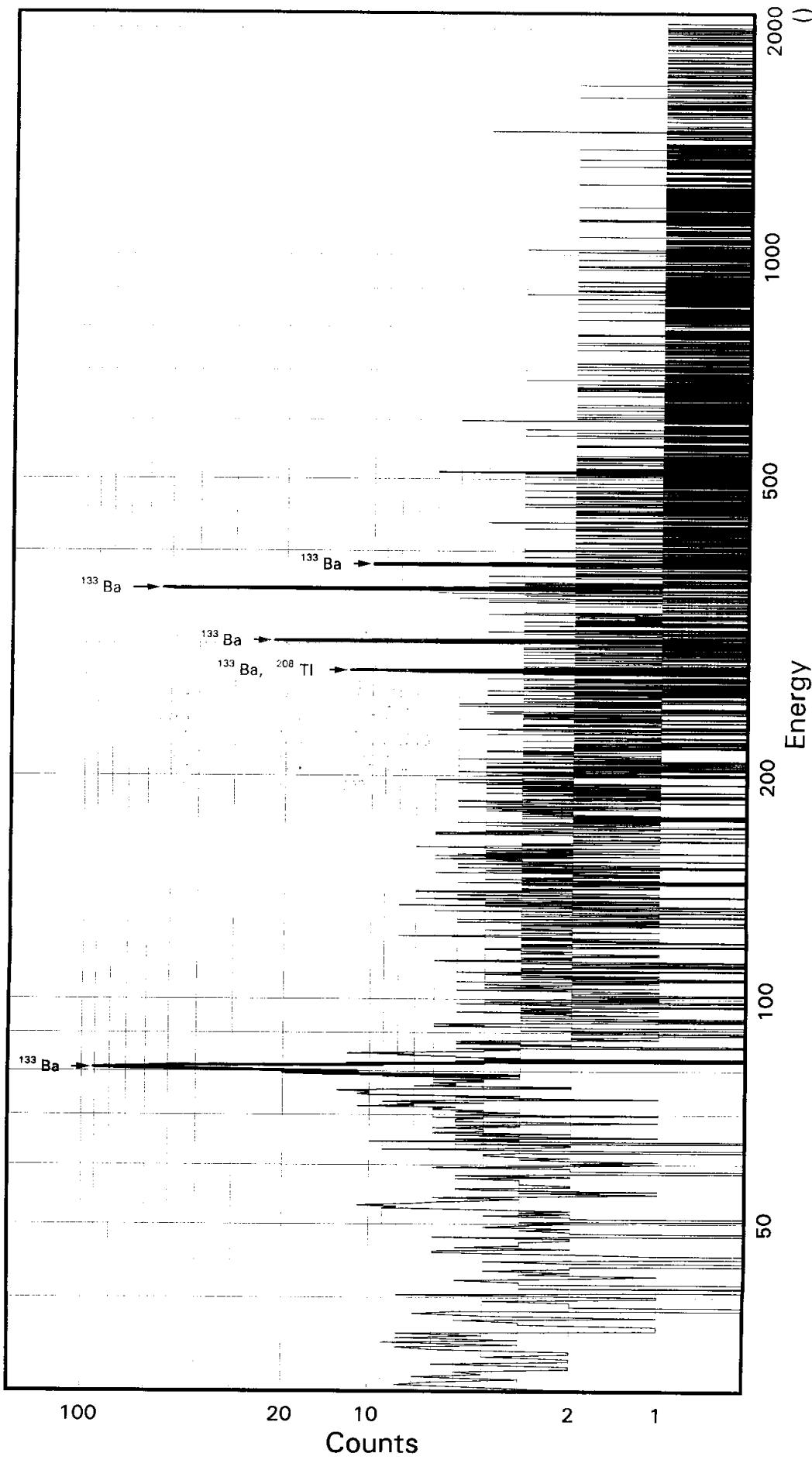
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	4.190E+00		7.337E+00	2.908E+01	5.869E-01	0.144
SB-125	-3.461E+01		2.396E+01	7.945E+01	1.591E+00	-0.436
SN-126DA	-9.929E-01		5.739E+00	2.152E+01	4.361E-01	-0.046
I-131	-1.380E+00		2.581E+01	9.415E+01	1.883E+00	-0.015
CS-134	1.107E-01		6.783E+00	2.613E+01	5.339E-01	0.004
CS-137DA	-1.894E+00		6.944E+00	2.572E+01	5.210E-01	-0.074
LA-138	-2.376E+00		5.822E+00	2.304E+01	4.911E-01	-0.103
CE-139	3.126E+01		1.503E+01	5.864E+01	1.196E+00	0.533
BA-140	1.803E+00		5.526E+01	2.087E+02	4.197E+00	0.009
BALA-140	-6.425E-02		1.015E+01	4.696E+01	1.011E+00	-0.001
LA-140	-1.592E+02		3.914E+02	1.713E+03	3.689E+01	-0.093
CE-141	-3.426E+00		2.807E+01	1.018E+02	2.091E+00	-0.034
CE-144	1.233E+02		1.067E+02	3.952E+02	8.157E+00	0.312
CEPR-144	2.429E+02		2.133E+02	7.892E+02	1.629E+01	0.308
PM-144	-7.044E+00		5.409E+00	1.816E+01	3.669E-01	-0.388
PM-146	-3.875E+00		1.041E+01	3.781E+01	7.576E-01	-0.102
EU-152	-3.823E+01		3.118E+01	1.033E+02	2.065E+00	-0.370
EU-154	1.009E+01		1.320E+01	5.676E+01	1.197E+00	0.178
EU-155	4.786E+01		4.694E+01	1.787E+02	3.752E+00	0.268
HF-181	6.400E+00		8.825E+00	3.538E+01	7.097E-01	0.181
BI-207	-5.192E+00		7.661E+00	2.721E+01	5.481E-01	-0.191
TL-208	-3.461E+00		7.181E+00	2.903E+01	5.853E-01	-0.119
BI-210M	1.091E+01		1.779E+01	6.744E+01	1.352E+00	0.162
BI-212	6.032E+01		8.372E+01	3.455E+02	1.055E+01	0.175
PB-212	-2.660E+00		2.673E+01	9.934E+01	1.997E+00	-0.027
BI-214	2.988E+00		1.911E+01	7.758E+01	1.566E+00	0.039
PB-214	6.134E+01		2.946E+01	1.091E+02	2.182E+00	0.562
RA-223	-5.882E+01		6.858E+01	2.380E+02	4.773E+00	-0.247
RA-224DA	-2.693E+00		2.706E+01	1.006E+02	2.022E+00	-0.027
RA-226DA	2.988E+00		1.911E+01	7.758E+01	1.566E+00	0.039
AC-227DA	-1.512E+02		1.056E+02	3.403E+02	6.844E+00	-0.444
AC-228	-3.377E+01		2.393E+01	8.838E+01	1.820E+00	-0.382
RA-228DA	-3.391E+01		2.402E+01	8.875E+01	1.827E+00	-0.382
TH-228DA	-9.753E+00		2.024E+01	8.181E+01	1.649E+00	-0.119
TH-232DA	1.160E+02		7.213E+01	2.841E+02	5.683E+00	0.408
TH-234DA	-1.795E+02		6.531E+02	2.565E+03	5.314E+01	-0.070
U-234DA	-6.960E+01		4.881E+01	1.681E+02	3.366E+00	-0.414
U-235HP	1.677E+02		9.485E+01	3.760E+02	7.726E+00	0.446
NP-237DA	2.226E+01		2.436E+01	9.303E+01	1.862E+00	0.239
U-238DA	6.134E+01		2.946E+01	1.091E+02	2.182E+00	0.562
U-238DHP	8.553E+01		2.941E+02	1.097E+03	2.419E+01	0.078
AM-241HP	-4.490E-01		2.873E+01	1.015E+02	2.254E+00	-0.004

STL Richland WA.

BA133

Sample ID: JKAHR1AC
Detector ID: GER6_1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:30:35.50
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.69196E-01
Slope: 2.49381E-01
Quadrature: 1.77235E-08

SAMPLE IDENTIFICATION: JKAHR1AC

CONFIGURATION ID: GER6:JKAHR1AC_041262030
TITLE : BA133
SAMPLE ID : JKAHR1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:30:35
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

ENERGY OFFSET: 1.6920E-01 keV
ENERGY SLOPE: 2.4938E-01 keV/C
ENERGY Q COEFF: 1.7724E-08 keV/C^2
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:25.19
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: 1.1281E-01 keV
FWHM SLOPE: 6.8184E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 4-DEC-2006 21:00:58

Configuration : \$DISK1:[GER6.SAMPLE]JKAHR1AC_041262030.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:35
Sample ID : JKAHR1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
Start energy : 20.12 End energy : 2044.28
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	80.94	347	62	0.91	323.86	316	16	1.93E-01	7.4	
2	0	276.47		57	1.24	1107.85	1097	19	3.17E-02	18.5	
3	0	302.90		103	1.19	1213.83	1206	15	5.73E-02	12.8	
4	0	356.01		310	1.22	1426.75	1418	22	1.72E-01	6.3	
5	0	383.89		52	1.39	1538.53	1530	15	2.86E-02	18.1	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER6.SAMPLE]JKAHR1AC 041262030.CNF;1
 Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6, NID V3.3
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:35
 Sample ID : JKAHR1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	347	33.00	2.167E+00	1.619E+03	1.622E+03	9.21
	276.40	57	6.90	2.334E+00	1.182E+03	1.185E+03	19.31
	302.84	103	17.80	2.337E+00	8.261E+02	8.279E+02	13.89
	356.00	310	62.05*	2.339E+00	7.129E+02	7.145E+02	8.27
	383.85	52	8.70	2.338E+00	8.439E+02	8.457E+02	18.91

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAHR1AC

Page : 2
Acquisition date : 4-DEC-2006 20:30:35

None

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAHR1AC

Page : 3
Acquisition date : 4-DEC-2006 20:30:35

Nuclide	Half-Life			Activity 1-Sigma			
	Half-life	Ratio	Energy	%Abund	(DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.199E+03	19.31	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
			% Abundances Found =		5.44		

Flag: "*" = Keyline

o

Configuration : \$DISK1:[GER6.SAMPLE]JKAHR1AC_041262030.CNF;1
 Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6, NID V3.3, WTMEAN/KEY V1.8
 Analyses by : MINACT V2.8
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:35
 Sample ID : JKAHR1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.22 0.0%
 Peak Width (FWHM) : 3.00 Confidence level : 5.00 %
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.145E+02	5.909E+01	5.149E+01	1.030E+00	13.876

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.039E+02		7.885E+01	2.679E+02	5.374E+00	-0.388
NA-22	7.758E-01		2.444E+00	1.288E+01	2.726E-01	0.060
K-40	7.799E+01		8.493E+01	3.910E+02	8.382E+00	0.199
SC-46	-7.043E+00		6.312E+00	2.165E+01	4.533E-01	-0.325
CR-51	-7.549E+01		1.192E+02	4.236E+02	8.475E+00	-0.178
MN-54	-1.267E+01		5.332E+00	1.435E+01	2.944E-01	-0.883
CO-57	-8.386E-01		1.167E+02	4.137E+02	8.543E+00	-0.002
CO-58	-6.157E+00		5.985E+00	2.086E+01	4.272E-01	-0.295
FE-59	-1.259E-01		6.453E+00	2.965E+01	6.198E-01	-0.004
CO-60	-5.818E+00		5.202E+00	1.826E+01	3.880E-01	-0.319
ZN-65	2.088E+01		1.108E+01	5.285E+01	1.106E+00	0.395
SE-75	-1.323E+01		1.442E+01	4.950E+01	9.930E-01	-0.267
SR-85	-3.051E+01		1.143E+01	3.349E+01	6.730E-01	-0.911
Y-88	5.121E+00		2.970E+00	1.836E+01	4.033E-01	0.279
NB-94	1.612E+00		5.244E+00	2.199E+01	4.523E-01	0.073
NB-95	-1.727E-02		5.270E+00	2.234E+01	4.560E-01	-0.001
TC-95M	-3.356E+00		1.624E+01	6.024E+01	1.218E+00	-0.056
ZR-95	5.980E-02		1.039E+01	4.236E+01	8.641E-01	0.001
ZRNB-95	-3.089E-02		9.429E+00	3.997E+01	8.159E-01	-0.001
MO-99	2.920E+02		2.648E+02	1.045E+03	2.155E+01	0.279
RH-101	5.801E+00		1.690E+01	6.108E+01	1.236E+00	0.095
RH-102M	7.947E-01		6.997E+00	2.760E+01	5.537E-01	0.029
RU-103	-6.281E+00		8.995E+00	3.273E+01	6.572E-01	-0.192
RU-106DA	-4.411E+01		5.402E+01	1.971E+02	3.986E+00	-0.224
AG-108M	-1.695E+01		7.590E+00	2.195E+01	4.396E-01	-0.772
AG-110M	4.301E+00		7.796E+00	3.316E+01	6.825E-01	0.130
SN-113DA	6.669E+00		1.114E+01	4.545E+01	9.092E-01	0.147

---- Non-Identified Nuclides ----

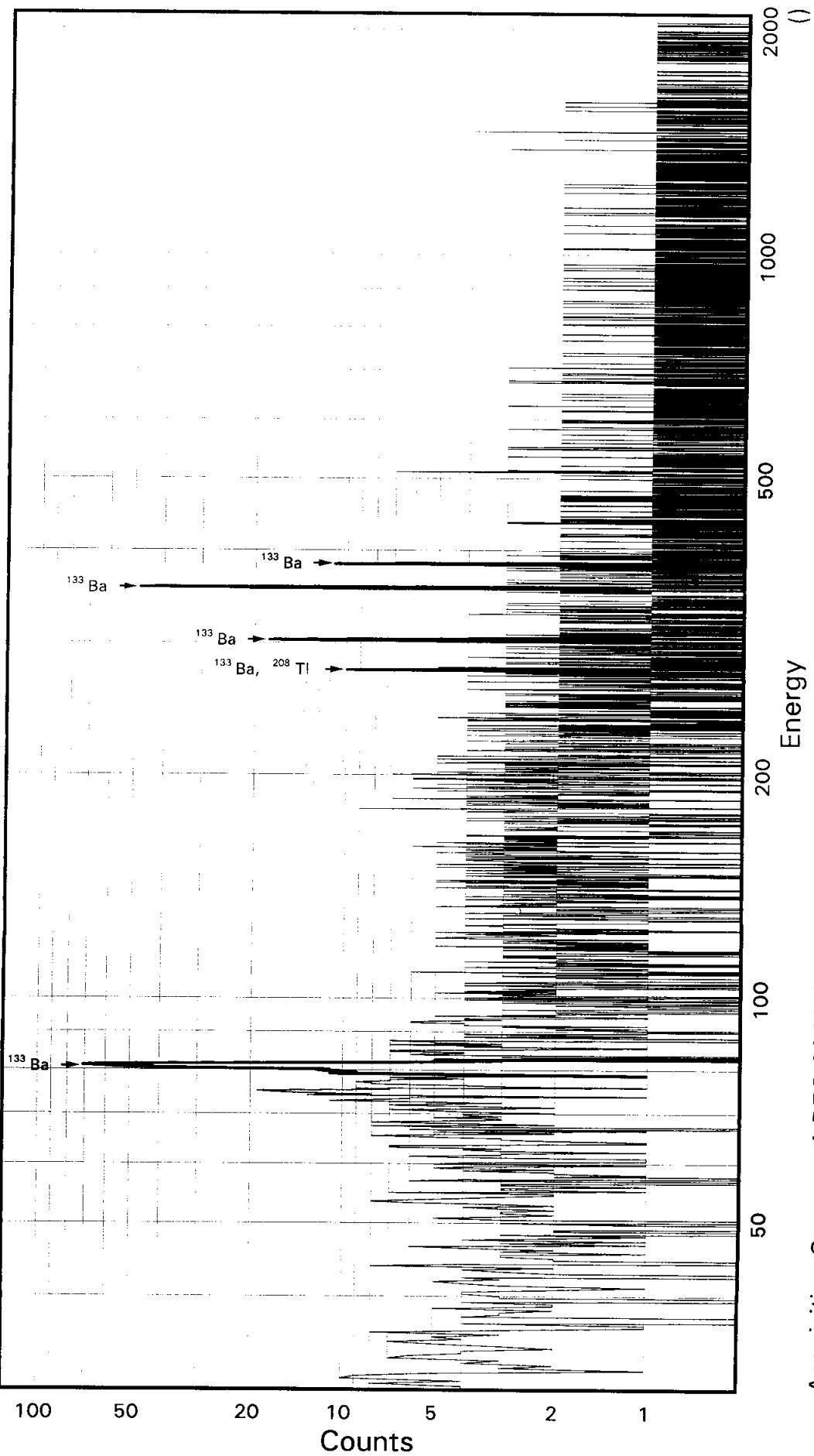
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-8.825E+00		7.937E+00	2.753E+01	5.559E-01	-0.321
SB-125	4.235E+01		2.258E+01	1.009E+02	2.019E+00	0.420
SN-126DA	-1.202E+01		6.274E+00	1.894E+01	3.840E-01	-0.635
I-131	-1.442E+01		2.630E+01	9.689E+01	1.938E+00	-0.149
CS-134	-7.145E-02		3.489E+00	1.602E+01	3.277E-01	-0.004
CS-137DA	-3.714E+00		6.877E+00	2.549E+01	5.167E-01	-0.146
LA-138	-9.007E+00		6.609E+00	2.175E+01	4.654E-01	-0.414
CE-139	2.284E+00		1.317E+01	4.913E+01	1.003E+00	0.046
BA-140	-2.387E+01		3.927E+01	1.468E+02	2.954E+00	-0.163
BALa-140	-3.800E+01		1.565E+01	1.706E+01	3.689E-01	-2.228
LA-140	-1.348E+03		6.074E+02	7.260E+02	1.571E+01	-1.857
CE-141	-3.975E+00		2.680E+01	9.925E+01	2.041E+00	-0.040
CE-144	2.434E+01		9.860E+01	3.616E+02	7.479E+00	0.067
CEPR-144	5.430E+01		1.976E+02	7.259E+02	1.501E+01	0.075
PM-144	-2.886E-01		4.620E+00	1.910E+01	3.861E-01	-0.015
PM-146	-1.815E+00		9.462E+00	3.599E+01	7.212E-01	-0.050
EU-152	-1.485E+01		3.473E+01	1.238E+02	2.475E+00	-0.120
EU-154	3.706E+00		7.300E+00	3.876E+01	8.203E-01	0.096
EU-155	-1.479E+00		4.630E+01	1.724E+02	3.631E+00	-0.009
HF-181	2.717E+00		9.078E+00	3.680E+01	7.383E-01	0.074
BI-207	1.040E+01		5.844E+00	2.692E+01	5.426E-01	0.386
TL-208	1.370E+01		7.545E+00	3.410E+01	6.878E-01	0.402
BI-210M	-1.975E+01		1.674E+01	5.583E+01	1.120E+00	-0.354
BI-212	-1.074E+02		5.760E+01	1.621E+02	4.955E+00	-0.662
PB-212	-8.889E+00		2.169E+01	7.986E+01	1.606E+00	-0.111
BI-214	1.015E+01		1.372E+01	5.951E+01	1.202E+00	0.170
PB-214	-1.495E+01		3.339E+01	9.764E+01	1.953E+00	-0.153
RA-223	1.033E+02		5.521E+01	2.377E+02	4.766E+00	0.435
RA-224DA	-8.998E+00		2.196E+01	8.085E+01	1.626E+00	-0.111
RA-226DA	1.027E+01		1.373E+01	5.959E+01	1.204E+00	0.172
AC-227DA	-5.245E+01		7.772E+01	2.753E+02	5.539E+00	-0.191
AC-228	2.641E+01		2.063E+01	9.237E+01	1.905E+00	0.286
RA-228DA	2.652E+01		2.071E+01	9.274E+01	1.913E+00	0.286
TH-228DA	3.860E+01		2.126E+01	9.609E+01	1.938E+00	0.402
TH-232DA	-8.527E+01		5.632E+01	1.822E+02	3.645E+00	-0.468
TH-234DA	2.613E+02		8.114E+02	3.415E+03	7.089E+01	0.077
U-234DA	-3.859E+01		4.006E+01	1.408E+02	2.819E+00	-0.274
U-235HP	2.700E+01		9.202E+01	3.518E+02	7.241E+00	0.077
NP-237DA	1.459E+01		1.997E+01	8.104E+01	1.622E+00	0.180
U-238DA	-1.495E+01		3.339E+01	9.764E+01	1.953E+00	-0.153
U-238DHP	-5.869E+02		3.159E+02	1.063E+03	2.359E+01	-0.552
AM-241HP	-2.506E+01		2.795E+01	9.811E+01	2.193E+00	-0.255

STL Richland WA.

BA1133

Sample ID: JKAHT1AC
Detector ID: GER7 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:30:46.78
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 6.48302E-01
Slope: 2.49222E-01
Quadrature: 1.30662E-07

SAMPLE IDENTIFICATION: JKAHT1AC

CONFIGURATION ID: GER7:JKAHT1AC_041262030
TITLE : BA133
SAMPLE ID : JKAHT1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:30:46
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

ENERGY OFFSET: 6.4830E-01 keV
ENERGY SLOPE: 2.4922E-01 keV/C
ENERGY Q COEFF: 1.3066E-07 keV/C^2
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:41.96
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: 5.5865E-01 keV
FWHM SLOPE: 3.4877E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 4-DEC-2006 21:01:14

Configuration : \$DISK1:[GER7.SAMPLE]JKAHT1AC 041262030.CNF;1
Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:46
Sample ID : JKAHT1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
Start energy : 20.59 End energy : 2051.04
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.08*	15	38	0.71	298.60	293	10	8.47E-03	92.3	
2	0	80.94	346	27	1.09	322.11	313	18	1.92E-01	6.4	
3	0	276.49	47	8	1.86	1106.17	1097	16	2.59E-02	20.0	
4	0	302.97	96	10	1.40	1212.27	1205	18	5.31E-02	12.7	
5	0	355.91	273	0	1.12	1424.43	1417	16	1.52E-01	6.1	
6	0	384.04	37	15	1.18	1537.13	1525	17	2.07E-02	27.7	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER7.SAMPLE]JKAHT1AC 041262030.CNF;1
 Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6, NID V3.3
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:46
 Sample ID : JKAHT1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	346	33.00	1.923E+00	1.819E+03	1.823E+03	8.42
	276.40	47	6.90	2.076E+00	1.085E+03	1.087E+03	20.72
	302.84	96	17.80	2.078E+00	8.610E+02	8.630E+02	13.76
	356.00	273	62.05*	2.080E+00	7.049E+02	7.065E+02	8.10
	383.85	37	8.70	2.080E+00	6.858E+02	6.873E+02	28.20

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAHT1AC

Page : 2

Acquisition date : 4-DEC-2006 20:30:46

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.08	15		38	0.71	298.60	293	10	8.47E-03	92.3	1.91E+00

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAHT1AC

Page : 3

Acquisition date : 4-DEC-2006 20:30:46

Nuclide	Half-Life			Activity 1-Sigma			
	Half-life	Ratio	Energy	%Abund	(DPM/SAMPL)	%Error	Rejected by
TL-208	1.41E+10Y	0.00	277.35	6.80	1.101E+03	20.72	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
			% Abundances Found =		5.44		

Flag: "*" = Keyline

Configuration : \$DISK1:[GER7.SAMPLE]JKAHT1AC 041262030.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8
 Analyses by : MINACT V2.8
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:46
 Sample ID : JKAHT1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.20 0.0%
 Peak Width (FWHM) : 3.00 Confidence level : 5.00 %
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.065E+02	5.724E+01	4.592E+01	9.184E-01	15.386

---- Non-Identified Nuclides ----

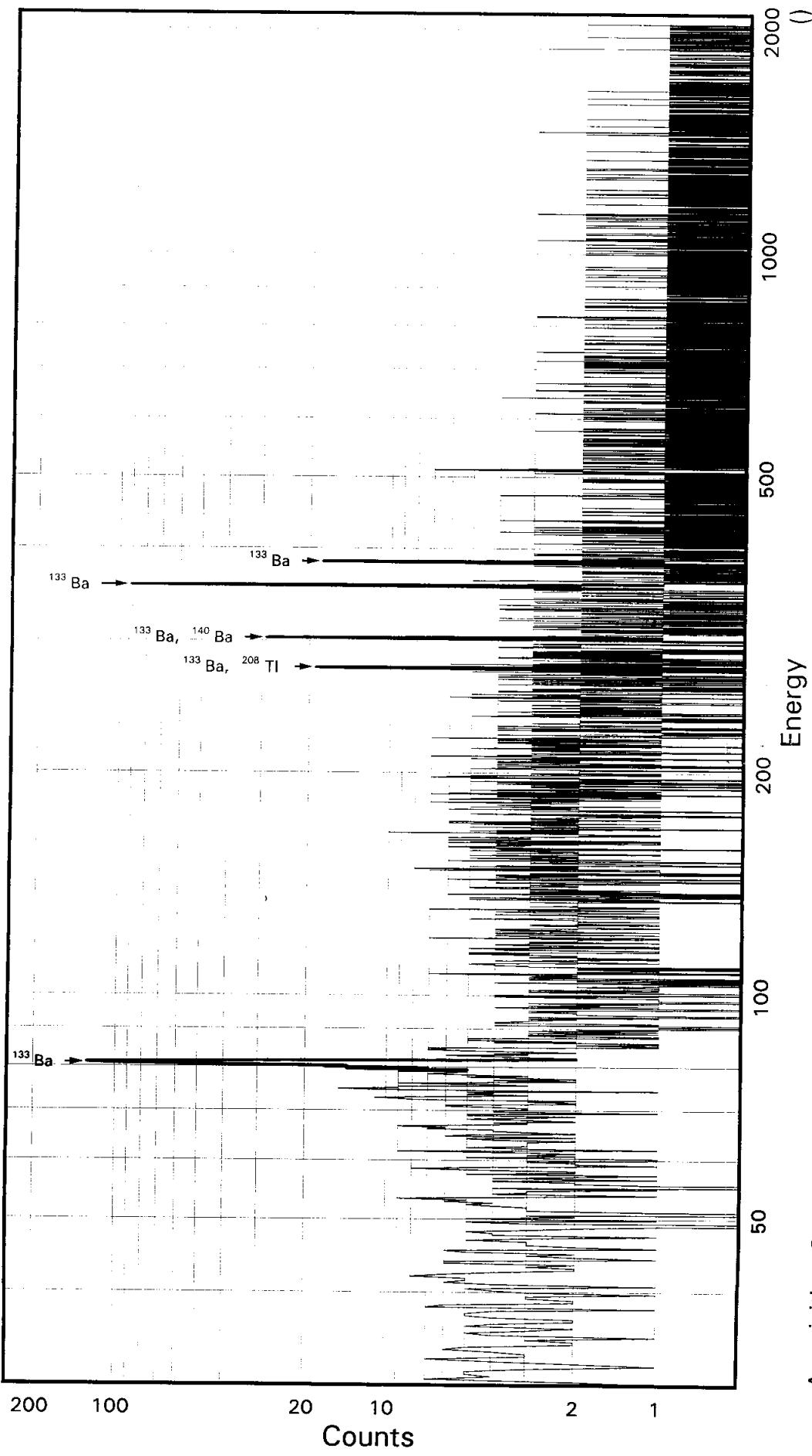
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-1.257E+02		6.013E+01	1.680E+02	3.371E+00	-0.748
NA-22	-1.670E+00		2.946E+00	1.261E+01	2.674E-01	-0.132
K-40	1.132E+02		6.780E+01	3.529E+02	7.581E+00	0.321
SC-46	1.861E+00		1.863E+00	1.368E+01	2.869E-01	0.136
CR-51	6.441E+01		8.671E+01	3.700E+02	7.403E+00	0.174
MN-54	4.911E+00		4.543E+00	2.215E+01	4.547E-01	0.222
CO-57	-3.714E+01		1.109E+02	4.024E+02	8.317E+00	-0.092
CO-58	-1.361E+01		5.827E+00	1.371E+01	2.809E-01	-0.993
FE-59	-7.773E+00		1.039E+01	3.869E+01	8.099E-01	-0.201
CO-60	-7.758E-03		3.431E+00	1.590E+01	3.385E-01	0.000
ZN-65	3.299E+00		6.013E+00	3.180E+01	6.664E-01	0.104
SE-75	-1.578E+01		1.501E+01	5.232E+01	1.050E+00	-0.302
SR-85	-3.573E+01		1.157E+01	3.100E+01	6.231E-01	-1.152
Y-88	7.726E+00		3.879E+00	2.313E+01	5.096E-01	0.334
NB-94	-6.086E+00		5.065E+00	1.774E+01	3.651E-01	-0.343
NB-95	1.248E+01		6.680E+00	3.319E+01	6.780E-01	0.376
TC-95M	1.696E+01		1.988E+01	7.595E+01	1.536E+00	0.223
ZR-95	5.166E+00		8.019E+00	3.879E+01	7.919E-01	0.133
ZRNB-95	2.233E+01		1.195E+01	5.939E+01	1.213E+00	0.376
MO-99	1.892E+02		2.760E+02	1.068E+03	2.203E+01	0.177
RH-101	-4.468E+00		1.774E+01	6.265E+01	1.269E+00	-0.071
RH-102M	7.947E-02		5.885E+00	2.403E+01	4.821E-01	0.003
RU-103	-3.015E+00		7.372E+00	2.871E+01	5.764E-01	-0.105
RU-106DA	-1.015E+02		7.616E+01	2.594E+02	5.247E+00	-0.391
AG-108M	9.894E+00		8.150E+00	3.507E+01	7.024E-01	0.282
AG-110M	-1.982E+00		6.087E+00	2.531E+01	5.215E-01	-0.078
SN-113DA	-5.024E+00		1.076E+01	4.109E+01	8.220E-01	-0.122

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	-8.216E+00		6.171E+00	2.116E+01	4.274E-01	-0.388
SB-125	1.757E+01		1.963E+01	8.746E+01	1.751E+00	0.201
SN-126DA	-7.931E+00		3.573E+00	4.394E+00	8.914E-02	-1.805
I-131	2.214E+00		2.817E+01	1.077E+02	2.153E+00	0.021
CS-134	1.758E+00		5.210E+00	2.331E+01	4.772E-01	0.075
CS-137DA	7.692E+00		4.678E+00	2.503E+01	5.075E-01	0.307
LA-138	1.803E+01		6.886E+00	3.865E+01	8.290E-01	0.466
CE-139	-4.896E+00		1.413E+01	5.091E+01	1.040E+00	-0.096
BA-140	-1.898E+01		4.562E+01	1.739E+02	3.499E+00	-0.109
BALa-140	-6.516E+00		1.859E+01	7.650E+01	1.659E+00	-0.085
LA-140	-2.775E+02		7.916E+02	3.256E+03	7.061E+01	-0.085
CE-141	-1.298E+01		3.126E+01	1.122E+02	2.309E+00	-0.116
CE-144	1.583E+01		1.079E+02	4.045E+02	8.374E+00	0.039
CEPR-144	3.165E+01		2.158E+02	8.089E+02	1.675E+01	0.039
PM-144	2.259E+00		7.124E+00	2.905E+01	5.874E-01	0.078
PM-146	5.108E+00		6.957E+00	3.245E+01	6.504E-01	0.157
EU-152	1.084E+01		2.129E+01	9.075E+01	1.815E+00	0.119
EU-154	-4.672E+00		8.242E+00	3.528E+01	7.480E-01	-0.132
EU-155	-3.126E+01		4.733E+01	1.723E+02	3.635E+00	-0.181
HF-181	1.838E-01		7.524E+00	3.128E+01	6.277E-01	0.006
BI-207	-3.101E+00		5.482E+00	2.061E+01	4.155E-01	-0.150
TL-208	1.564E+00		7.753E+00	3.197E+01	6.450E-01	0.049
BI-210M	3.363E+00		1.752E+01	6.770E+01	1.358E+00	0.050
BI-212	-9.953E+01		6.116E+01	1.824E+02	5.575E+00	-0.546
PB-212	-9.400E-01		2.256E+01	9.034E+01	1.817E+00	-0.010
BI-214	-8.216E+00		1.465E+01	6.132E+01	1.239E+00	-0.134
PB-214	2.840E+01		2.572E+01	1.020E+02	2.041E+00	0.278
RA-223	-7.238E+01		6.924E+01	2.400E+02	4.813E+00	-0.302
RA-224DA	-9.516E-01		2.284E+01	9.146E+01	1.840E+00	-0.010
RA-226DA	-8.076E+00		1.467E+01	6.142E+01	1.241E+00	-0.131
AC-227DA	-1.470E+02		8.920E+01	2.954E+02	5.943E+00	-0.498
AC-228	1.881E+01		2.130E+01	9.467E+01	1.954E+00	0.199
RA-228DA	1.889E+01		2.139E+01	9.505E+01	1.962E+00	0.199
TH-228DA	4.407E+00		2.185E+01	9.008E+01	1.817E+00	0.049
TH-232DA	8.434E+01		6.254E+01	2.660E+02	5.320E+00	0.317
TH-234DA	2.283E+02		6.727E+02	3.042E+03	6.323E+01	0.075
U-234DA	-2.721E+01		4.461E+01	1.716E+02	3.436E+00	-0.159
U-235HP	4.744E+00		1.141E+02	4.205E+02	8.663E+00	0.011
NP-237DA	-1.776E+01		2.379E+01	8.428E+01	1.687E+00	-0.211
U-238DA	2.840E+01		2.572E+01	1.020E+02	2.041E+00	0.278
U-238DHP	-6.110E+02		4.049E+02	1.369E+03	3.047E+01	-0.446
AM-241HP	-3.603E+00		3.844E+01	1.393E+02	3.125E+00	-0.026

STL Richland WA.
BA133
Sample ID: JKAAHV1AC
Detector ID: GER121

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:30:57.70
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: 1.14570E+01
Slope: 2.47717E-01
Quadrature: -1.10557E-09

SAMPLE IDENTIFICATION: JKAHV1AC

CONFIGURATION ID: GER12:JKAHV1AC_041262030
TITLE : BA133
SAMPLE ID : JKAHV1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:30:57
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

ENERGY OFFSET: 1.1457E+01 keV
ENERGY SLOPE: 2.4772E-01 keV/C
ENERGY Q COEFF: -.1106E-08 keV/C^2
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 2.000 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:32:45.59
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: 3.3398E-01 keV
FWHM SLOPE: 4.0219E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 4-DEC-2006 21:01:28

Configuration : \$DISK1:[GER12.SAMPLE]JKAHV1AC 041262030.CNF;1
Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:57
Sample ID : JKAHV1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 0.0%
Start energy : 11.70 End energy : 2040.68
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	75.40*	7	44	1.51	258.15	252	12	4.11E-03	196.6	
2	0	80.94	377	61	0.63	280.49	273	13	2.09E-01	6.7	
3	0	276.75	45	25	0.68	1070.96	1063	12	2.53E-02	26.2	
4	0	302.94	98	28	0.71	1176.67	1169	13	5.45E-02	14.4	
5	0	356.11	407	48	1.05	1391.33	1381	22	2.26E-01	6.6	
6	0	383.94	63	27	0.75	1503.69	1497	16	3.48E-02	22.7	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER12.SAMPLE]JKAHV1AC_041262030.CNF;1
 Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6, NID V3.3
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:57
 Sample ID : JKAHV1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 0.0%
 Energy tolerance : 2.00 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay Corr DPM/SAMPL	1-Sigma %Error
BA-133	81.00	377	33.00	2.899E+00	1.312E+03	1.315E+03	8.59
	276.40	45	6.90	3.105E+00	7.075E+02	7.091E+02	26.75
	302.84	98	17.80	3.109E+00	5.913E+02	5.927E+02	15.38
	356.00	407	62.05*	3.111E+00	7.026E+02	7.041E+02	8.54
	383.85	63	8.70	3.111E+00	7.725E+02	7.742E+02	23.29

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAHV1AC

Page : 2

Acquisition date : 4-DEC-2006 20:30:57

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	75.40	7	44	1.51	258.15	252	12	4.11E-03	****	2.88E+00	

Flags: "T" = Tentatively associated

Nuclide	Half-Life			Activity 1-Sigma				
	Half-life	Ratio	Energy	%Abund	(DPM/SAMPL)	%Error	Rejected by	
BA-140	12.79D	162.64	6.70	---	Not Found	---	Abun.	
		304.84	4.50	4.572E+03	15.38			
		423.70	3.20	---	Not Found	---		
		537.32*	25.00	---	Not Found	---		
% Abundances		Found =	11.42					
TL-208	1.41E+10Y	277.35	6.80	7.179E+02	26.75	Abun.		
		510.84	21.60	---	Not Found	---		
		583.14*	84.20	---	Not Found	---		
		860.37	12.46	---	Not Found	---		
% Abundances		Found =	5.44					

Flag: "*" = Keyline

Configuration : \$DISK1:[GER12.SAMPLE]JKAHV1AC_041262030.CNF;1
 Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6, NID V3.3, WTMEAN/KEY V1.8
 Analyses by : MINACT V2.8
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:30:57
 Sample ID : JKAHV1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 0.0%
 Peak Width (FWHM) : 3.00 Confidence level : 5.00 %
 Energy tolerance : 2.00 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.041E+02	6.013E+01	4.053E+01	8.106E-01	17.373

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	3.274E+01		4.785E+01	2.016E+02	4.043E+00	0.162
NA-22	-2.162E+00		2.747E+00	1.058E+01	2.229E-01	-0.204
K-40	-2.276E-01		5.139E+01	2.391E+02	5.099E+00	-0.001
SC-46	2.972E+00		4.199E+00	1.963E+01	4.096E-01	0.151
CR-51	4.199E+01		7.717E+01	3.034E+02	6.071E+00	0.138
MN-54	-2.220E-02		2.771E+00	1.213E+01	2.483E-01	-0.002
CO-57	1.314E+01		6.928E+01	2.616E+02	5.390E+00	0.050
CO-58	-6.181E+00		3.293E+00	9.142E+00	1.869E-01	-0.676
FE-59	-1.938E+01		8.424E+00	2.221E+01	4.628E-01	-0.873
CO-60	1.165E+00		3.002E+00	1.366E+01	2.890E-01	0.085
ZN-65	-2.423E+00		6.088E+00	2.453E+01	5.116E-01	-0.099
SE-75	-7.322E+00		1.127E+01	4.015E+01	8.053E-01	-0.182
SR-85	-1.627E+01		9.187E+00	3.017E+01	6.059E-01	-0.539
Y-88	2.548E+00		1.807E+00	1.182E+01	2.578E-01	0.216
NB-94	1.209E+01		4.028E+00	2.070E+01	4.247E-01	0.584
NB-95	1.545E+00		4.142E+00	1.830E+01	3.730E-01	0.084
TC-95M	1.333E+01		1.275E+01	5.076E+01	1.025E+00	0.263
ZR-95	-6.349E+00		6.638E+00	2.427E+01	4.943E-01	-0.262
ZRNB-95	2.764E+00		7.412E+00	3.274E+01	6.673E-01	0.084
MO-99	1.014E+02		1.965E+02	7.690E+02	1.581E+01	0.132
RH-101	3.456E+01		1.190E+01	4.889E+01	9.888E-01	0.707
RH-102M	-5.646E+00		5.466E+00	1.868E+01	3.746E-01	-0.302
RU-103	-8.578E+00		6.471E+00	2.117E+01	4.249E-01	-0.405
RU-106DA	-5.746E+01		3.436E+01	1.049E+02	2.119E+00	-0.548
AG-108M	-4.931E+00		6.148E+00	2.169E+01	4.344E-01	-0.227
AG-110M	-3.580E-01		3.855E+00	1.657E+01	3.404E-01	-0.022
SN-113DA	6.272E+00		8.511E+00	3.498E+01	6.997E-01	0.179

---- Non-Identified Nuclides ----

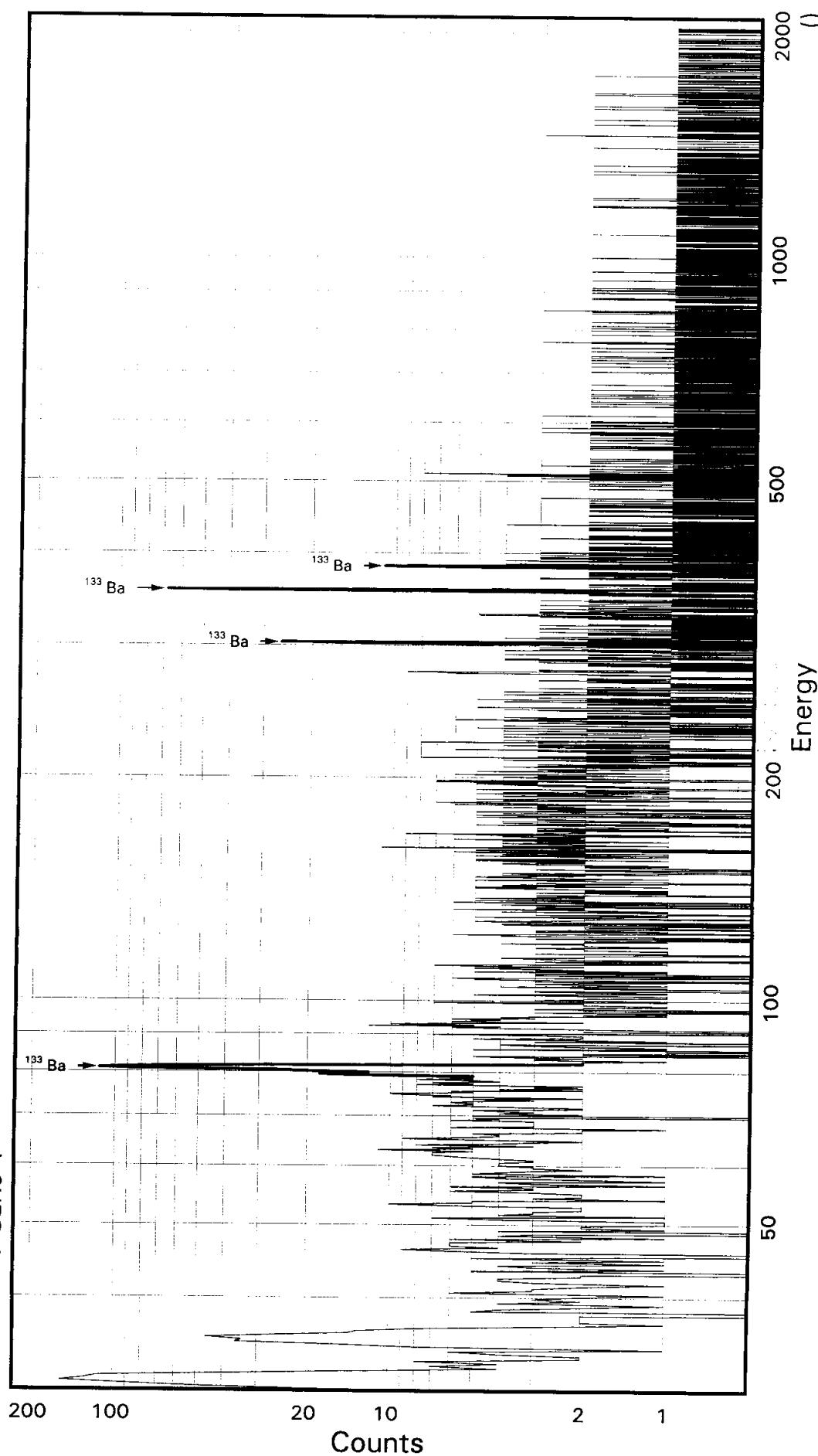
Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	7.970E+00		5.459E+00	2.418E+01	4.879E-01	0.330
SB-125	1.796E+01		1.613E+01	6.920E+01	1.386E+00	0.260
SN-126DA	4.451E+00		4.167E+00	1.832E+01	3.711E-01	0.243
I-131	-2.628E+01		1.913E+01	6.481E+01	1.296E+00	-0.405
CS-134	2.390E+00		4.427E+00	1.919E+01	3.920E-01	0.125
CS-137DA	-6.767E+00		4.731E+00	1.534E+01	3.105E-01	-0.441
LA-138	-5.286E+00		3.904E+00	1.257E+01	2.677E-01	-0.420
CE-139	7.455E+00		1.137E+01	4.255E+01	8.671E-01	0.175
BA-140	1.999E+01		3.698E+01	1.526E+02	3.070E+00	0.131
BALa-140	-1.450E+01		1.215E+01	4.233E+01	9.102E-01	-0.343
LA-140	-4.826E+02		4.651E+02	1.691E+03	3.636E+01	-0.285
CE-141	-2.987E+00		2.179E+01	7.912E+01	1.624E+00	-0.038
CE-144	-7.843E+01		7.003E+01	2.404E+02	4.960E+00	-0.326
CEPR-144	-1.552E+02		1.402E+02	4.818E+02	9.939E+00	-0.322
PM-144	8.910E+00		4.219E+00	2.026E+01	4.092E-01	0.440
PM-146	8.130E+00		5.555E+00	2.625E+01	5.261E-01	0.310
EU-152	-1.912E+01		2.068E+01	7.387E+01	1.477E+00	-0.259
EU-154	-6.048E+00		7.684E+00	2.959E+01	6.235E-01	-0.204
EU-155	-2.188E+01		3.257E+01	1.187E+02	2.489E+00	-0.184
HF-181	1.428E+00		5.916E+00	2.414E+01	4.841E-01	0.059
BI-207	4.488E+00		3.481E+00	1.658E+01	3.340E-01	0.271
TL-208	-7.540E+00		4.774E+00	1.539E+01	3.103E-01	-0.490
BI-210M	1.362E+01		1.261E+01	5.086E+01	1.020E+00	0.268
BI-212	8.728E+01		6.736E+01	3.000E+02	9.164E+00	0.291
PB-212	2.120E+01		1.439E+01	5.952E+01	1.197E+00	0.356
BI-214	-5.655E+00		1.179E+01	4.975E+01	1.004E+00	-0.114
PB-214	-3.854E+01		2.316E+01	7.060E+01	1.412E+00	-0.546
RA-223	-2.283E+01		4.699E+01	1.692E+02	3.393E+00	-0.135
RA-224DA	2.146E+01		1.457E+01	6.025E+01	1.211E+00	0.356
RA-226DA	-5.655E+00		1.180E+01	4.975E+01	1.004E+00	-0.114
AC-227DA	-1.392E+02		5.622E+01	1.679E+02	3.376E+00	-0.829
AC-228	-3.670E+00		9.297E+00	3.821E+01	7.863E-01	-0.096
RA-228DA	-3.685E+00		9.335E+00	3.837E+01	7.895E-01	-0.096
TH-228DA	-2.125E+01		1.345E+01	4.337E+01	8.743E-01	-0.490
TH-232DA	-2.152E+01		4.109E+01	1.536E+02	3.073E+00	-0.140
TH-234DA	-2.378E+02		6.375E+02	2.466E+03	5.105E+01	-0.096
U-234DA	1.111E+01		3.865E+01	1.512E+02	3.027E+00	0.073
U-235HP	-9.631E+00		7.566E+01	2.756E+02	5.660E+00	-0.035
NP-237DA	-1.360E+01		1.635E+01	5.660E+01	1.133E+00	-0.240
U-238DA	-3.854E+01		2.316E+01	7.060E+01	1.412E+00	-0.546
U-238DHP	-8.117E+01		2.333E+02	8.349E+02	1.838E+01	-0.097
AM-241HP	-1.490E+01		2.139E+01	7.583E+01	1.681E+00	-0.196

STL Richland WA.

BA133

Sample ID: JKAHW1AC
Detector ID: GER5 1

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 20:31:37.55
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

Energy Coefficients:
Offset: -3.24095E-01
Slope: 2.49450E-01
Quadrature: -4.10729E-09

SAMPLE IDENTIFICATION: JKAHW1AC

CONFIGURATION ID: GER5:JKAHW1AC_041262031
TITLE : BA133
SAMPLE ID : JKAHW1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:31:37
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

ENERGY OFFSET: -.3241E+00 keV
ENERGY SLOPE: 2.4945E-01 keV/C
ENERGY Q COEFF: -.4107E-08 keV/C^2
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 1.500 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:31:13.73
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: 7.3464E-01 keV
FWHM SLOPE: 2.7667E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 4-DEC-2006 21:01:52

Configuration : RDND06\$DKA100:[GER5.SAMPLE]JKAHW1AC_041262031.CNF;1
Analyses by : PEAK V16.9, PEAKEFF V2.2, ENBACK V1.6
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:31:37
Sample ID : JKAHW1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
Start energy : 19.63 End energy : 2042.90
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	31.01	536	130	0.91	125.62	118	15	2.98E-01	6.3	
2	0	35.28	181	39	0.94	142.73	136	16	1.01E-01	10.7	
3	2	79.50	49	49	0.98	320.00	316	17	2.72E-02	26.2	3.83E+00
4	2	81.03	413	42	0.93	326.13	316	17	2.29E-01	5.8	
5	0	302.75	105	4	0.94	1214.97	1206	18	5.81E-02	10.9	
6	0	355.98	306	9	1.10	1428.37	1419	19	1.70E-01	6.2	
7	0	383.71	54	0	1.14	1539.57	1532	15	3.00E-02	13.6	
8	0	387.06	11	0	0.60	1553.00	1549	8	6.11E-03	30.2	

Flag: "*" = Peak area was modified by background subtraction

Configuration : RDND06\$DKA100:[GER5.SAMPLE]JKAHW1AC_041262031.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:31:37
 Sample ID : JKAHW1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay DPM/SAMPL	Corr	1-Sigma
								%Error
BA-133	81.00	413	33.00	1.924E+00	2.166E+03	2.171E+03		7.96
	276.40	-----	6.90	2.077E+00	-----	Line Not Found		-----
	302.84	105	17.80	2.080E+00	9.412E+02	9.433E+02		12.14
	356.00	306	62.05*	2.082E+00	7.891E+02	7.909E+02		8.22
	383.85	54	8.70	2.081E+00	9.941E+02	9.963E+02		14.64

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKAHW1AC

Page : 2

Acquisition date : 4-DEC-2006 20:31:37

It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	%Eff	Flags
0	31.01	536	130	0.91	125.62	118	15	2.98E-01	6.3	1.68E+00	
0	35.28	181	39	0.94	142.73	136	16	1.01E-01	10.7	1.72E+00	
2	79.50	49	49	0.98	320.00	316	17	2.72E-02	26.2	1.92E+00	
0	387.06	11	0	0.60	1553.00	1549	8	6.11E-03	30.2	2.08E+00	

Flags: "T" = Tentatively associated

Rejected Report
Sample ID : JKAHW1AC

Page : 3
Acquisition date : 4-DEC-2006 20:31:37

Flag: "*" = Keyline

Configuration : RDND06\$DKA100:[GER5.SAMPLE]JKAHW1AC_041262031.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.4,WTMEAN/KEY V1.8
 Analyses by : MINACT V2.8
 Sample title : BA133
 Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:31:37
 Sample ID : JKAHW1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.23 0.0%
 Peak Width (FWHM) : 3.00 Confidence level : 5.00 %
 Energy tolerance : 1.50 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.909E+02	6.498E+01	5.073E+01	1.015E+00	15.591

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	-5.501E+01		5.461E+01	1.947E+02	3.905E+00	-0.283
NA-22	-2.220E-01		4.266E+00	1.839E+01	3.898E-01	-0.012
NA-24	2.705E-02		9.647E-01	Half-Life too short		
K-40	5.122E+01		7.169E+01	3.549E+02	7.626E+00	0.144
SC-46	3.729E+00		5.881E+00	2.621E+01	5.495E-01	0.142
CR-51	-1.500E+01		1.119E+02	4.177E+02	8.358E+00	-0.036
MN-54	-4.326E+00		4.730E+00	1.715E+01	3.520E-01	-0.252
CO-57	1.612E+02		1.276E+02	4.897E+02	1.012E+01	0.329
CO-58	5.525E+00		4.963E+00	2.441E+01	5.002E-01	0.226
FE-59	9.632E-01		8.957E+00	3.984E+01	8.340E-01	0.024
CO-60	1.460E+00		4.628E+00	2.055E+01	4.376E-01	0.071
ZN-65	3.460E+00		1.026E+01	4.486E+01	9.403E-01	0.077
SE-75	4.016E+00		1.529E+01	5.911E+01	1.186E+00	0.068
SR-85	-3.721E+01		1.156E+01	3.015E+01	6.059E-01	-1.234
Y-88	3.847E+00		2.728E+00	1.785E+01	3.931E-01	0.216
NB-94	-1.708E+00		1.711E+00	4.454E+00	9.168E-02	-0.383
NB-95	3.922E+00		6.588E+00	2.926E+01	5.976E-01	0.134
TC-95M	-6.046E+00		2.198E+01	7.916E+01	1.601E+00	-0.076
ZR-95	1.010E+01		1.309E+01	5.623E+01	1.148E+00	0.180
ZRNB-95	7.451E+00		1.186E+01	5.276E+01	1.078E+00	0.141
MO-99	-6.359E+02		3.296E+02	1.024E+03	2.113E+01	-0.621
RH-101	2.363E+01		1.868E+01	7.223E+01	1.463E+00	0.327
RH-102M	-3.455E+00		4.841E+00	1.833E+01	3.678E-01	-0.188
RU-103	1.105E+01		8.765E+00	3.910E+01	7.851E-01	0.283
RU-106DA	-6.276E+01		4.624E+01	1.569E+02	3.174E+00	-0.400
AG-108M	-2.267E+01		9.251E+00	2.677E+01	5.362E-01	-0.847
AG-110M	6.863E+00		6.306E+00	3.081E+01	6.347E-01	0.223

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SN-113DA	1.881E+01		1.500E+01	6.193E+01	1.239E+00	0.304
SB-124	9.164E+00		6.662E+00	3.111E+01	6.285E-01	0.295
SB-125	-2.659E+01		2.115E+01	7.222E+01	1.446E+00	-0.368
SN-126DA	4.739E+00		4.781E+00	2.262E+01	4.588E-01	0.210
I-131	6.211E+00		2.412E+01	9.811E+01	1.962E+00	0.063
CS-134	-5.919E+00		4.395E+00	1.427E+01	2.922E-01	-0.415
CS-137DA	-5.261E+00		5.621E+00	2.065E+01	4.187E-01	-0.255
LA-138	-2.509E+00		2.513E+00	6.958E+00	1.492E-01	-0.361
CE-139	-1.119E+00		1.816E+01	6.632E+01	1.355E+00	-0.017
BA-140	-3.882E+00		5.436E+01	2.098E+02	4.221E+00	-0.019
BALa-140	-7.191E+00		1.236E+01	5.226E+01	1.133E+00	-0.138
LA-140	-3.062E+02		5.265E+02	2.225E+03	4.825E+01	-0.138
CE-141	-3.943E+01		3.620E+01	1.201E+02	2.472E+00	-0.328
CE-144	1.413E+02		1.171E+02	4.531E+02	9.380E+00	0.312
CEPR-144	2.788E+02		2.339E+02	9.046E+02	1.873E+01	0.308
PM-144	1.921E+00		4.334E+00	2.008E+01	4.059E-01	0.096
PM-146	-2.459E+01		1.055E+01	2.971E+01	5.955E-01	-0.828
EU-152	-7.424E+00		2.980E+01	1.135E+02	2.270E+00	-0.065
EU-154	-2.351E+00		1.158E+01	4.903E+01	1.039E+00	-0.048
EU-155	5.963E+01		5.720E+01	2.227E+02	4.699E+00	0.268
HF-181	-1.250E-01		8.264E+00	3.347E+01	6.717E-01	-0.004
BI-207	1.125E+01		6.514E+00	2.996E+01	6.039E-01	0.375
TL-208	1.000E+01		9.875E+00	4.163E+01	8.400E-01	0.240
BI-210M	-3.000E+01		1.698E+01	5.349E+01	1.073E+00	-0.561
BI-212	-1.369E+02		8.691E+01	2.789E+02	8.527E+00	-0.491
PB-212	1.933E+01		2.788E+01	1.106E+02	2.225E+00	0.175
BI-214	-3.028E+01		1.318E+01	4.578E+01	9.252E-01	-0.661
PB-214	-2.787E+00		2.323E+01	8.693E+01	1.739E+00	-0.032
RA-223	8.421E+01		6.691E+01	2.739E+02	5.493E+00	0.307
RA-224DA	1.957E+01		2.823E+01	1.120E+02	2.253E+00	0.175
RA-226DA	-2.705E+01		1.273E+01	4.570E+01	9.235E-01	-0.592
AC-227DA	-1.820E+02		1.038E+02	3.348E+02	6.736E+00	-0.544
AC-228	2.896E+01		2.012E+01	9.461E+01	1.953E+00	0.306
RA-228DA	2.908E+01		2.020E+01	9.500E+01	1.961E+00	0.306
TH-228DA	2.818E+01		2.783E+01	1.173E+02	2.367E+00	0.240
TH-232DA	-5.481E+01		6.862E+01	2.463E+02	4.926E+00	-0.223
TH-234DA	1.296E+03		7.658E+02	3.841E+03	7.983E+01	0.337
U-234DA	-5.512E+01		5.126E+01	1.807E+02	3.618E+00	-0.305
U-235HP	-5.849E+00		1.232E+02	4.395E+02	9.054E+00	-0.013
NP-237DA	1.403E+01		2.308E+01	9.141E+01	1.829E+00	0.153
U-238DA	-2.787E+00		2.323E+01	8.693E+01	1.739E+00	-0.032
U-238DHP	-2.358E+02		5.176E+02	1.939E+03	4.316E+01	-0.122
AM-241HP	-5.414E+01		4.587E+01	1.563E+02	3.506E+00	-0.346

STL Richland WA.

BA133

Sample ID: JKENM1AA
Detector ID: NAI1 1

BatchID: 6332252
Library: [NUC_LIBR]BA133.NLB

Counts

Energy (keV)
Start Channel: 80
End Channel: 113
Iterations: 5
Gain shift: Iter
Acquisition Start: 4-DEC-2006 20:32:03.03
Preset Live Time: 0 00:30:00
Elapsed Live Time: 0 00:30:00
Weighting: DERIVED

SAMPLE IDENTIFICATION: JKENM1AA

CONFIGURATION ID: NAI1:JKENM1AA_041262032
TITLE : BA133
SAMPLE ID : JKENM1AA

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 20:32:03
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY:

ENERGY OFFSET: 0.0000E+00 keV
ENERGY SLOPE: 4.0000E+00 keV/C
ENERGY Q COEFF: 0.0000E+00 keV/C²
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 75.00 %
ENERGY TOLERANCE: 20.000 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 22-NOV-2006 12:00:00.00
CALIB DATE: 17-NOV-1993 10:39:59.60
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: -.2302E+02 keV
FWHM SLOPE: 5.7163E+00 sqr keV
ITERATIONS: 5
GAUSSIAN SENSITIVITY: 35.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]BA133.NLB

VMS NAI Report V1.2 Generated 4-DEC-2006 21:02:08

Configuration : RDND06\$DKA100:[NAI1.SAMPLE]JKENM1AA_041262032.CNF;1
Analyses by : NAI V3.0
Sample title : BA133
Sample date : 22-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 20:32:03
Sample ID : JKENM1AA Sample quantity : 1.0000 samp1
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.65 0.0%
Sample Multiplier: 1.00 Rejection Coeff. : 0.00
Gain shift type : ITER Threshold Shift : No
Weighting type : DERIVED Calculated counts: No
Iterations : 5

NAI Residuals Report

Ratio of Residuals Over Standard Deviation Per Channel

80:	2.9	4.9	5.7	2.5	2.8	0.7	3.9	0.5
88:	0.5	2.4	2.1	-1.6	-0.7	-0.3	2.0	-0.5
96:	0.3	-1.6	-0.8	-1.3	-2.8	-0.5	-2.7	-1.5
104:	-3.5	-2.1	-1.9	-2.5	-3.5	-4.0	-2.8	-1.8
112:	-1.0	-5.4						

List of Suspicious Channels

81 82 83

Iteration	Chi-Squared	Threshold Shift	Gain Shift
1	7.19E+00	0.00E+00	1.02E+00
2	3.43E+00	0.00E+00	1.04E+00
3	1.08E+00	0.00E+00	1.05E+00

Brief Report

Nuclide	Activity	1-Sigma
DPM/sampl		Error
BA-133	769.	9.53

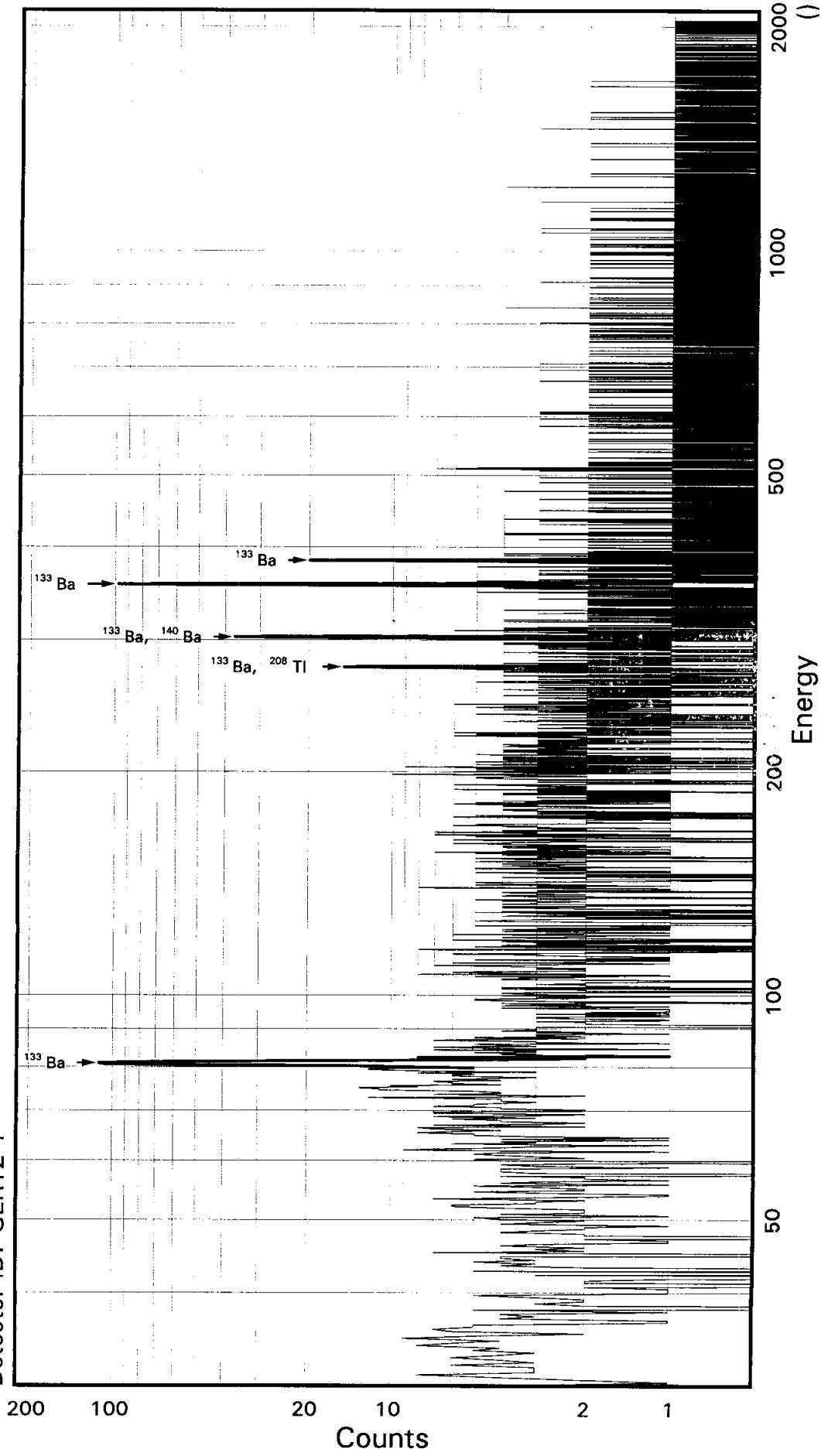
Total Activity :	769.	

STL Richland WA.

BA133

Sample ID: JKENM1AC
Detector ID: GER121

Batch ID: 6332252



Acquisition Start: 4-DEC-2006 21:06:36.34
Preset Live Time: 0 00:30:00.00
Elapsed Live Time: 0 00:30:00.00

{
Energy Coefficients:
Offset: 1.14570E+01
Slope: 2.47717E-01
Quadrature: -1.10557E-09

SAMPLE IDENTIFICATION: JKENM1AC

CONFIGURATION ID: GER12:JKENM1AC_041262106
TITLE : BA133
SAMPLE ID : JKENM1AC

REPORT DATE: 04-DEC-06
ACQUIRE DATE: 04-DEC-06 21:06:36
ELAPSED LIVE TIME: 1800.0 Sec
PRESET LIVE TIME: 0 00:30:00

SAMPLE QUANTITY: 1.0000E+00
SAMPLE GEOMETRY: BA133T15

ENERGY OFFSET: 1.1457E+01 keV
ENERGY SLOPE: 2.4772E-01 keV/C
ENERGY Q COEFF: -.1106E-08 keV/C²
PEAK SENSITIVITY: 5.000

ABUNDANCE LIMIT: 80.00 %
ENERGY TOLERANCE: 2.000 keV
VARIABLE PEAK WIDTH: 3.00

SAMPLE DATE: 20-NOV-2006 12:00:00.00
CALIB DATE: 4-DEC-2006 05:32:45.59
ELAPSED LIVE TIME: 0 00:30:00
ELAPSED REAL TIME: 0 00:30:00

UNITS: SAMPL
SAMPLE TYPE:

FWHM OFFSET: 3.3398E-01 keV
FWHM SLOPE: 4.0219E-02 sqr keV
ITERATIONS: 10
GAUSSIAN SENSITIVITY: 10.00 %

HALF-LIFE RATIO: 8.00
ACTIVITY MULTIPLIER: 2.2200E+06
LIBRARY: [NUC_LIBR]QRL.NLB

VMS Peak Search Report V1.9 Generated 4-DEC-2006 21:49:20

Configuration : \$DISK1:[GER12.SAMPLE]JKENM1AC_041262106.CNF;1
Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6
Sample title : BA133
Sample date : 20-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 21:06:36
Sample ID : JKENM1AC Sample quantity : 1.0000 SAMPL
Sample type : Sample geometry : BA133T15
Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 0.0%
Start energy : 11.70 End energy : 2040.68
Sensitivity : 5.00 Gaussian : 10.00
Critical level : No

Pk	It	Energy	Area	Bkgnd	FWHM	Channel	Left	Pw	Cts/Sec	%Err	Fit
1	0	81.03	377	52	0.81	280.87	276	13	2.09E-01	6.7	
2	0	276.30	48	25	1.00	1069.15	1062	13	2.68E-02	26.0	
3	0	302.86	155	12	1.01	1176.34	1168	15	8.64E-02	9.3	
4	0	356.06	457	41	1.07	1391.13	1380	23	2.54E-01	5.9	
5	0	383.99	94	4	0.88	1503.86	1495	18	5.20E-02	11.6	

Flag: "*" = Peak area was modified by background subtraction

Configuration : \$DISK1:[GER12.SAMPLE]JKENM1AC_041262106.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3
 Sample title : BA133
 Sample date : 20-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 21:06:36
 Sample ID : JKENM1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 0.0%
 Energy tolerance : 2.00 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00

Nuclide Line Activity Report

Nuclide Type: FP

Nuclide	Energy	Area	%Abn	%Eff	Uncorrected DPM/SAMPL	Decay DPM/SAMPL	Corr 1-Sigma
							%Error
BA-133	81.00	377	33.00	2.899E+00	1.312E+03	1.315E+03	8.65
	276.40	48	6.90	3.105E+00	7.498E+02	7.518E+02	26.59
	302.84	155	17.80	3.109E+00	9.363E+02	9.388E+02	10.75
	356.00	457	62.05*	3.111E+00	7.887E+02	7.908E+02	8.00
	383.85	94	8.70	3.111E+00	1.154E+03	1.157E+03	12.80

Flag: "*" = Keyline

Unidentified Energy Lines
Sample ID : JKENM1AC

Page : 2
Acquisition date : 4-DEC-2006 21:06:36

None

Flags: "T" = Tentatively associated

Nuclide	Half-Life			Activity 1-Sigma			
	Half-life	Ratio	Energy	%Abund	(DPM/SAMPL)	%Error	Rejected by
BA-140	12.79D	1.13	162.64	6.70	---	Not Found	---
			304.84	4.50	8.078E+03	10.75	Abun.
			423.70	3.20	---	Not Found	---
			537.32*	25.00	---	Not Found	---
		% Abundances	Found	=	11.42		
TL-208	1.41E+10Y	0.00	277.35	6.80	7.609E+02	26.59	Abun.
			510.84	21.60	---	Not Found	---
			583.14*	84.20	---	Not Found	---
			860.37	12.46	---	Not Found	---
		% Abundances	Found	=	5.44		

Flag: "*" = Keyline

Configuration : \$DISK1:[GER12.SAMPLE]JKENM1AC_041262106.CNF;1
 Analyses by : PEAK V16.9,PEAKEFF V2.2,ENBACK V1.6,NID V3.3,WTMEAN/KEY V1.8
 Analyses by : MINACT V2.8
 Sample title : BA133
 Sample date : 20-NOV-2006 12:00:00 Acquisition date : 4-DEC-2006 21:06:36
 Sample ID : JKENM1AC Sample quantity : 1.0000 SAMPL
 Sample type : Sample geometry : BA133T15
 Elapsed live time: 0 00:30:00.00 Elapsed real time: 0 00:30:00.35 0.0%
 Peak Width (FWHM) : 3.00 Confidence level : 5.00 %
 Energy tolerance : 2.00 Half life ratio : 8.00
 Errors propagated: Yes Systematic Error : 5.00 %
 Efficiency type : Empirical Efficiencies at : Peak Energy
 Abundance limit : 80.00 WTM error limit : 3.00

Combined Activity-MDA Report

---- Identified Nuclides ----

Nuclide	Activity (DPM/SAMPL)	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BA-133	7.908E+02	6.324E+01	3.695E+01	7.390E-01	21.402

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
BE-7	2.853E+00		4.857E+01	1.926E+02	3.863E+00	0.015
NA-22	1.176E-01		3.188E+00	1.370E+01	2.888E-01	0.009
K-40	-4.305E+01		4.678E+01	2.140E+02	4.564E+00	-0.201
SC-46	-7.544E-01		3.668E+00	1.649E+01	3.441E-01	-0.046
CR-51	2.852E+00		8.373E+01	3.142E+02	6.286E+00	0.009
MN-54	-4.988E+00		4.787E+00	1.666E+01	3.411E-01	-0.299
CO-57	-1.811E+01		7.653E+01	2.783E+02	5.734E+00	-0.065
CO-58	-6.067E+00		4.238E+00	1.394E+01	2.850E-01	-0.435
FE-59	-2.566E+00		6.573E+00	2.657E+01	5.536E-01	-0.097
CO-60	-5.650E+00		2.545E+00	3.079E+00	6.512E-02	-1.835
ZN-65	1.313E+00		5.943E+00	2.649E+01	5.524E-01	0.050
SE-75	1.990E+01		1.178E+01	4.897E+01	9.822E-01	0.406
SR-85	-2.294E+01		8.992E+00	2.747E+01	5.518E-01	-0.835
Y-88	2.582E+00		1.831E+00	1.198E+01	2.612E-01	0.216
NB-94	-5.676E+00		3.372E+00	1.020E+01	2.093E-01	-0.556
NB-95	-1.839E+00		5.461E+00	2.120E+01	4.320E-01	-0.087
TC-95M	1.635E+01		1.509E+01	5.891E+01	1.190E+00	0.278
ZR-95	8.296E+00		8.370E+00	3.739E+01	7.616E-01	0.222
ZRNB-95	-5.620E+00		9.927E+00	3.733E+01	7.608E-01	-0.151
MO-99	8.288E+01		3.395E+02	1.301E+03	2.676E+01	0.064
RH-101	3.981E+00		1.339E+01	4.789E+01	9.685E-01	0.083
RH-102M	7.775E+00		4.497E+00	2.069E+01	4.149E-01	0.376
RU-103	1.024E+01		6.548E+00	2.918E+01	5.857E-01	0.351
RU-106DA	5.619E+01		4.117E+01	1.889E+02	3.817E+00	0.297
AG-108M	-1.329E+00		6.917E+00	2.551E+01	5.108E-01	-0.052
AG-110M	9.658E-01		3.453E+00	1.625E+01	3.338E-01	0.059
SN-113DA	-1.306E+01		8.789E+00	2.911E+01	5.824E-01	-0.449

---- Non-Identified Nuclides ----

Nuclide	Key-Line Activity (DPM/SAMPL)	K.L. Ided	Act error	MDA (DPM/SAMPL)	MDA error	Act/MDA
SB-124	3.094E+00		6.438E+00	2.569E+01	5.184E-01	0.120
SB-125	-4.010E+00		1.617E+01	6.150E+01	1.231E+00	-0.065
SN-126DA	-8.060E+00		4.346E+00	1.303E+01	2.639E-01	-0.619
I-131	-2.652E+01		2.405E+01	8.378E+01	1.676E+00	-0.317
CS-134	2.353E+00		4.038E+00	1.800E+01	3.676E-01	0.131
CS-137DA	3.855E+00		3.906E+00	1.813E+01	3.672E-01	0.213
LA-138	-7.788E-02		3.459E+00	1.587E+01	3.378E-01	-0.005
CE-139	2.302E+01		1.156E+01	4.608E+01	9.391E-01	0.500
BA-140	-6.273E+00		3.560E+01	1.410E+02	2.836E+00	-0.044
BALa-140	-5.045E+00		8.994E+00	3.869E+01	8.320E-01	-0.130
CE-141	1.179E+01		1.889E+01	7.363E+01	1.511E+00	0.160
CE-144	3.289E+01		7.258E+01	2.768E+02	5.709E+00	0.119
CEPR-144	6.236E+01		1.449E+02	5.519E+02	1.139E+01	0.113
PM-144	-3.010E+00		3.461E+00	1.262E+01	2.549E-01	-0.239
PM-146	7.381E-01		6.436E+00	2.580E+01	5.170E-01	0.029
EU-152	-1.193E+01		1.917E+01	7.093E+01	1.419E+00	-0.168
EU-154	3.291E-01		8.907E+00	3.829E+01	8.069E-01	0.009
EU-155	-6.284E+01		3.894E+01	1.312E+02	2.752E+00	-0.479
HF-181	3.378E+00		4.802E+00	2.188E+01	4.388E-01	0.154
BI-207	1.242E+00		3.947E+00	1.658E+01	3.340E-01	0.075
TL-208	2.986E+00		5.449E+00	2.254E+01	4.544E-01	0.132
BI-210M	-1.646E+01		1.261E+01	4.227E+01	8.478E-01	-0.389
BI-212	2.244E+01		4.917E+01	2.198E+02	6.714E+00	0.102
PB-212	-4.741E+00		1.408E+01	5.193E+01	1.044E+00	-0.091
BI-214	1.491E+00		1.333E+01	5.616E+01	1.134E+00	0.027
PB-214	-1.157E+01		1.791E+01	6.489E+01	1.298E+00	-0.178
RA-223	3.134E+01		4.483E+01	1.774E+02	3.557E+00	0.177
RA-224DA	-4.809E+00		1.429E+01	5.268E+01	1.059E+00	-0.091
RA-226DA	1.491E+00		1.333E+01	5.616E+01	1.134E+00	0.027
AC-227DA	-6.949E+01		5.413E+01	1.843E+02	3.707E+00	-0.377
AC-228	3.499E+01		1.764E+01	7.999E+01	1.646E+00	0.437
RA-228DA	3.515E+01		1.772E+01	8.037E+01	1.654E+00	0.437
TH-228DA	8.431E+00		1.539E+01	6.365E+01	1.283E+00	0.132
TH-232DA	3.275E+01		4.192E+01	1.737E+02	3.475E+00	0.189
TH-234DA	-9.864E+02		5.304E+02	1.583E+03	3.277E+01	-0.623
U-234DA	-5.766E+01		4.055E+01	1.408E+02	2.819E+00	-0.410
U-235HP	-1.248E+02		6.913E+01	2.218E+02	4.555E+00	-0.563
NP-237DA	7.640E+00		1.969E+01	7.386E+01	1.478E+00	0.103
U-238DA	-1.157E+01		1.791E+01	6.489E+01	1.298E+00	-0.178
U-238DHP	-1.930E+02		2.382E+02	8.261E+02	1.819E+01	-0.234
AM-241HP	-1.699E+01		2.267E+01	7.977E+01	1.768E+00	-0.213